clearance around the assist. Passenger assists shall be designed to minimize catching or snagging of clothes or personal items and shall be capable of passing the NHTSA Drawstring Test.

Any joints in the assist structure shall be underneath supporting brackets and securely clamped to prevent passengers from moving or twisting the assists. Passenger assists shall be designed to minimize glare in the Operator's area to the extent possible. With the exception of seat and door handholds, all areas of the passenger assists that are handled by passengers including functional components used as passenger assists shall be of anodized aluminum or stainless steel. Seat handholds may be of the same construction and finish as the seat frame. Door mounted passenger assists shall be of anodized aluminum, stainless steel, or powder coated metal. Connecting tees and angles may be powder coated metal castings. Assists shall withstand a force of 300 pounds applied over a 12-inch lineal dimension in any direction normal to the assist without permanent visible deformation. All passenger assist components, including brackets, clamps, screw heads, and other fasteners used on the passenger assists shall be designed to eliminate pinching, snagging and cutting hazards and shall be free from burrs or rough edges.

Front doors, or the entry area, shall be fitted with ADA compliant assists. Assists shall be as far outward as practicable, but shall be located no farther inboard than 6 inches from the outside edge of the entrance step and shall be easily grasped by a 5th percentile female boarding from street level. Door assists shall be functionally continuous with the horizontal front passenger assist and the vertical assist and the assists on the wheel housing or on the front modesty panel.

The aisle side of the operator's barrier, the wheel housings, and when applicable the modesty panels shall be fitted with vertical passenger assists that are functionally continuous with the overhead assist and that extend to within 36 inches of the floor. These assists shall have sufficient clearance from the barrier to prevent inadvertent wedging of a passenger's arm.

A horizontal passenger assist shall be located across the front of the bus and shall prevent passengers from sustaining injuries on the fare collection device or windshield in the event of a sudden deceleration. Without restricting the vestibule space, the assist shall provide support for a boarding passenger from the front door through the fare collection procedure. Passengers shall be able to lean against the assist for security while paying fares. The assist shall be no less than 36 inches above the floor. The assists at the front of the bus shall be arranged to permit a 5th-percentile female passenger to easily reach from the door assist, to the front assist, to vertical assists on the operator's barrier, wheel housings, or front modesty panel.

Vertical assists that are functionally continuous with the overhead assist shall be provided at the aisle side of the transverse seat immediately forward of the rear door and on the aisle side of the rear door modesty panel(s). Passenger assists shall be provided on modesty panels that are functionally continuous with the rear door assists. Rear doors, or the exit area, shall be fitted with assists no less than 3/4 inch in width and shall provide at least 1-1/2 inches of knuckle clearance between the assists and their mounting. The assists shall be designed to permit a 5th-percentile female to easily move from one assist to another during the entire exiting process. The assists shall be located no farther inboard than 6 inches from the outside edge of the rear doorway.

Except forward of the standee line and at the rear door, a continuous, full grip, overhead assist shall be provided. This assist shall be convenient to standees anywhere in the bus and shall be located over the center of the aisle seating position of the transverse seats. The assist shall be no less than 70 inches above the floor.

Straps or other extensions as necessary shall be provided for sections where vertical assists are not available and for the use by passengers that can not reach to 70 inches. Straps shall be provided in the front of the bus where the wheelchair securements are located and there is a large space between vertical assists.

Overhead assists shall simultaneously support 150 pounds on any 12 inch length. No more than 5 percent of the full grip feature shall be lost due to assist supports.

Longitudinal seats shall have vertical assists located between every other designated seating position, except for seats that fold/flip up to accommodate wheelchair securement. Assists shall extend from near the leading edge of the seat and shall be functionally continuous with the overhead assist. Assists shall be staggered across the aisle from each other where practicable and shall be no more than 52 inches apart or functionally continuous for a 5th percentile female passenger.

Unless passenger seating is provided on top of wheel housing, passenger assists shall be mounted around the exposed sides of the wheel housings (and propulsion compartments if applicable) which shall also be designed to prevent passengers from sitting on wheel housings. Such passenger assists shall also effectively retain items, such as bags and luggage, placed on top of wheel housing.

NOISE LEVELS

The bus interior and exterior noise levels shall meet the requirements of the APTA "Standard Bus Procurement Guidelines."

BUS INTERIOR

Ceiling panels shall be white melamine-type material suitable for exterior skin painted and finished to exterior quality. Headlining shall be supported to prevent buckling, drumming, or flexing and shall be secured without loose edges. Headlining materials shall be treated or insulated to prevent marks due to condensation where panels are in contact with metal members. Moldings and trim strips, as required to make the edges tamperproof, shall be stainless steel, aluminum, or plastic, colored to complement the ceiling material. Headlining panels covering operational equipment that is mounted above the ceiling shall be on hinges for ease of service but retained to prevent inadvertent opening.

Interior panels shall be attached so that there are no exposed unfinished or rough edges or rough surfaces. Panels and fasteners shall not be easily removable by passengers. Interior trim fasteners, where required, shall be rivets or cross-recessed head screws.

Advertising media 11 inches high and 0.09 inches thick shall be retained near the juncture of the bus ceiling and sidewall. The retainers may be concave and shall support the media without adhesives. The media shall be illuminated by the interior fluorescent light system.

Any insulation material used between the inner and outer panels shall be sealed or self-sealing to minimize entry and/or retention of moisture. Insulation properties shall be unimpaired during the service life of the bus. Any insulation material used inside the engine compartment shall not absorb or retain oils or water and shall be designed to prevent casual damage that may occur during maintenance operations. All insulation materials shall comply with the Recommended Fire Safety Practices defined in FTA Docket 90, dated October 20, 1993.

Access for maintenance and replacement of equipment shall be provided by panels and doors that appear to be an integral part of the interior. Access doors shall be hinged with gas props or over-center springs, where practical, to hold the doors out of the mechanic's way. Panel fasteners shall be standardized so that only one tool is required to service all special fasteners within the bus.

The bus body shall be thoroughly sealed so that the operator or passengers cannot feel drafts during normal operations with the passenger doors closed.

The floor covering shall have a non-skid walking surface that remains effective in all weather conditions and complies with all ADA requirements. The floor covering, as well as transitions of flooring material to the main floor and to the entrance and exit area, shall be smooth and present no tripping hazards. The standee line shall be at least 2 inches wide and shall extend across the bus aisle. This line shall be the same color as the outboard edge of the entrance/exit areas. The flooring shall be RCA TR604 black marbleized material or equal.

Any areas on floor, which are not intended for standees, such as areas "swept" during passenger door operation, shall be clearly and permanently marked. The floor in the operator's compartment shall be easily cleaned and shall be arranged to minimize debris accumulation.

A one (1) piece center strip shall extend from the vertical wall of the rear settee between the aisle sides of transverse seats to the standee line. If the floor is of a bi-level construction, then center strip shall be one (1) piece at each level. The covering between the center strip and the wheel housings may be separate pieces. At the rear door, however, a separate strip as wide as the door shall extend from the center strip to the outboard edge of the rear/exit area. The floor under the seats shall be covered with smooth surface flooring material. The floor covering shall closely fit the sidewall cove or extend to the top of the cove.

Access openings in the floor shall be sealed to prevent entry of fumes and water into the bus interior. Flooring material shall be flush with the floor and shall be edge-bound with stainless steel, or other material that is acceptable to ConnDOT, to prevent the edges from coming loose. Access openings shall be asymmetrical so that reinstalled flooring shall be properly aligned. Fasteners shall tighten flush with the floor.

Two (2) 15¼ in. high by 10 in. wide by 14½ in. long black rubber waste baskets shall be provided in each bus. One (1) will be secured on the curb side wheel well next to the schedule rack. The second will be secured behind the curb side seat directly in front of the rear door.

Provisions shall be made on the rear of the operator's barrier for two (2) frames to retain information that are sized 17 inches wide and 11 inches high posted by the transit system, such as notices and schedule changes. The frames shall be Transit Information Products MC TAB HOR or equal. Overall size is 18.490 in. by 11.875 in. by 0.25 in. The unit shall be fabricated from clear acrylic and display one 11 inch wide x 17 inch tall insert, and shall have openings at the bottom to reduce dust accumulation. All outside edges shall be flame polished. The unit installs with nine (9) flat head 4-40 screws.

A Transit Information Products OBIC-WW8-P metal or equal multi-pocket schedule holder shall be provided and secured on the bus front curb side wheelwell.

A passenger "Stop Requested" signal system that complies with applicable ADA requirements defined in 49 CFR, Part 38.37 shall be provided. The system shall consist of a heavy-duty pull cable, chime, and interior sign message. The pull cable shall be located the full length of the bus on the sidewalls at the level where the transom is located. If no transom window is required, height of pull cable shall approximate this transom level and shall be no greater than 63 inches as measured from floor surface. It shall be easily accessible to all passengers, seated or standing. Vertical pull cords shall also be provided between all windows in the front lower section of the bus. Pull cable(s) shall activate a solid state or magnetic proximity switch(es). At each wheelchair parking position and priority seating positions additional provisions shall be included to allow a passenger in a mobility aid to easily activate "Stop Requested" signal.

An auxiliary passenger "Stop Requested" signal shall be installed at the rear door to provide passengers standing in the rear door/exit area convenient means of activating the signal system. The signal shall be a heavy-duty push button type located above rear door on the rear door actuator compartment access panel. Button shall be clearly identified as "Passenger Signal."

A heavy-duty "Stop Request" signal button shall be installed on modesty panel stanchion immediately forward of rear door and clearly identified as "Passenger Signal."

Exit signals located in the wheelchair parking area shall be no higher than 4 feet above the floor. Instructions shall be provided to clearly indicate function and operation of these signals.

A single "Stop Requested" chime shall sound when the system is first activated. A double chime shall sound when the system is first activated from wheelchair passenger areas.

A "Stop Requested" message in red letters shall be illuminated when the passenger "Stop Requested" signal system is activated. The message shall remain visible until one or both passenger doors are opened. The message shall be visible to the seated operator and seated passengers.

The operator shall be able to deactivate the signal system from the operator's area. A green light shall be mounted above the rear door, approximately on center of the rear door actuator compartment access panel, to indicate when the rear doors have been unlocked.

PAINT & DECALS

The CTTRANSIT buses shall be painted in metallic blue (DUHS 16429) and metallic silver (DUHS 36352) paint with high quality 3M or equal reflective stripes. This is a base coat/clear coat system. The clear coat contains an anti graffiti additive. The paint and color scheme for the other transit systems in this procurement will be determined at preproduction. They should be costed out based upon the CTTRANSIT paint and color scheme.

Monograms, numbers and other special signing specified by ConnDOT shall be applied to the inside and outside of the bus as required. Signs shall be best quality durable and fade-, chip-, and peel-resistant; they may be painted signs, decals, or pressure-sensitive appliqués. All decals shall be sealed with clear, waterproof sealant around all exposed edges if required by the decal supplier. Signs shall be provided in compliance with the ADA requirements defined in 49 CFR Part, Subpart B, 38.27.

A sample list of decals to be provided shall include all manufacturer safety related decals as well as the following:

Exterior Decals

- Handicapped Accessible Symbol
- Bus System Logo
  Bus System URL
  Bus System Telephone #
- "Seats xx"
  ConnDOT logo/Operated By ...
- Stand Back When Flashing ... Wheelchair Ramp Arrow
- Bus number (Front, Back and two on each side and large number on the roof)
  Wide Right Turns ...
- For Your Safety ...
- Bike Rack (Standard safety and operating instruction decals on Bike Rack)

Interior Decals

- Wait for Light ... (English & Spanish)
- For your safety, ... (English & Spanish)
- No radios, smoking, etc... (English & Spanish)
- Video Camera ..." (English & Spanish)
- Make seats available ...
- Bus number on dash
- "Watch Your Step" on stanchions and rear platform step
- Handicapped Accessible Symbol
- Pull Cord Signal

All exterior surfaces shall be smooth and free of wrinkles and dents. Exterior surfaces to be painted shall be properly prepared as required by the paint system supplier, prior to application of paint to assure a proper bond between the basic surface and successive coats of original paint for the service life of the bus. Drilled holes and cutouts in exterior surfaces shall be made prior to cleaning, priming and painting to

prevent corrosion. The bus shall be completely painted prior to installation of exterior lights, windows, mirrors and other items that are applied to the exterior of the bus. Body filler materials may be used for surface dressing, but not for repair of damaged or improperly fitted panels.

Paint shall be applied smoothly and evenly with the finished surface free of dirt and the following other imperfections:

A. Blisters or bubbles appearing in the topcoat film.
B. Chips, scratches, or gouges of the surface finish.
C. Cracks in the paint film.
D. Craters where paint failed to cover due to surface contamination.
E. Overspray.
F. Peeling
G. Runs or sags from excessive flow and failure to adhere uniformly to the surface.
H. Chemical stains and water spots.

To the degree consistent with industry standards for commercial vehicle finishes, painted surfaces shall have gloss and orange peel shall be minimized. All exterior finished surfaces shall be impervious to diesel fuel, gasoline and commercial cleaning agents. Finished surfaces shall resist damage by controlled applications of commonly used graffiti-removing chemicals.

WHEELCAHIR RAMP/LIFT/SECUREMENT

The design and construction of the bus shall be in accordance with all requirements defined in 49 CFR, Part 38, Subpart B: ADA Accessibility Specifications for Transportation Vehicles - Buses, Vans and Systems. A wheelchair lift system shall be provided in the 45' commuter bus. A front door wheelchair ramp system shall be provided in the low floor buses. The ramp when deployed in the street shall not exceed a 1:6 slope ratio which exceeds to current ADA requirement of 1:4. The Contractor shall provide a plan submitted with their proposal, including layout drawings for entry, maneuvering, parking, and exiting of wheelchair passengers, to show compliance with ADA regulations.

An automatically-controlled, power-operated ramp system compliant to requirements defined in 49 CFR Part 38, Subpart B, §38.23c shall provide ingress and egress quickly, safely, and comfortably, both in forward and rearward directions, for a passenger in a wheelchair from a level street or curb into the low floor buses.

The ramp shall be a, simple hinged, fold over type design. The weight of the wheelchair loading system shall not exceed 200 pounds. The ramp shall be equipped with a finish flange that permits the installer to trim-out the ramp to vehicle floor interface with a simple lap joint. The wheelchair loading system including all pumps, motors and hydraulics, must be completely self-contained and be replaceable within thirty (30) minutes by a mechanic.

All exposed surfaces shall be fabricated from stainless steel. When the system is not in use, the passageway shall appear normal. In the stored position of the ramp, no tripping hazards shall be presented and any resulting gaps shall be minimized. The controls shall be simple to operate with no complex phasing operations required, and the loading system operation shall be under the surveillance and complete control of the operator. If the wheelchair lift system in the commuter bus is at the rear door, a switch shall be provided in the operator's area to disable the loading system. The bus shall be prevented from moving during the loading or unloading cycle by a throttle and brake interlock system. The wheelchair loading system shall not present a hazard, nor inconvenience any passenger. The loading system shall be inhibited from retracting or folding when a passenger is on the ramp/platform. A passenger departing or boarding via the ramp shall be able to easily obtain support by grasping the passenger assist located on the doors or other assists provided for this purpose. The platform shall be designed to protect the ramp from damage and persons on the sidewalk from injury during the extension/retraction or lowering/raising phases of operation. The loading platform shall be covered with a replaceable or renewable, nonskid material and shall be fitted with devices to prevent the wheelchair from rolling off the sides during loading or unloading. The stow and deploy speed of the

ramp shall be adjustable. The device shall function without failure or adjustment for 500 cycles or 5,000 miles in all weather conditions on the design operating profile when activated once during the idle phase. A manual override system shall permit unloading a wheelchair and storing the device in the event of a primary power failure. The ramp assembly components shall be replaceable within thirty (30) minutes by a mechanic. The ramp shall be constructed to permit the bus vendor to provide a substantial structural connection at the front edge of the ramp, between the doorposts to minimize damage to the ramp system resulting from impacts to the lower, front right hand corner of the bus. Fabrication and assembly of the wheelchair loading system shall be executed under the control of an ISO9001 registered quality assurance system. Installation must be approved by the ramp or wheelchair lift manufacturer prior to bus delivery.

Two (2) forward-facing locations, as close to the wheelchair loading system as practical, shall provide parking space and securement system compliant with and exceeding ADA requirements for a passenger in a wheelchair. Restraint devices will be provided at the two (2) PMAD seating positions to restrain the wheelchairs and their occupants.

The American Seating Advanced Restraint Module A.R.M. or equal system will be provided. This will include the American Seating Dual Auto-Lok system or equal for the rear wheelchair securement belts.

The ADA securement system shall be an integral part of the vehicle seating. The seating shall be designed by means of fold-up, convertible seating units to minimize the amount of ambulatory passenger seating losses, provide a safe securement for mobility aid users and allow for a quick, easy to use system for transit supplies. The system shall include a three (3) point lap and shoulder occupant restraint belt and four (4) mobility aid securement belts optimally placed for stability and adaptable for the widest range of equipment. This system shall comply with the strength and free movement criteria of the ADA accessibility guidelines for transportation vehicles; final guidelines per regulation 36 CFR part 1192 and conforming to all applicable FMVSS. (Note: ADA measurements are from the raised seat to the aisle and not from the bus wall to the aisle).

The system's recommended minimum spacing is 53 inches in the longitudinal direction and 35 inches from the wall (raised seat). The minimum securement area, as specified by ADA, is for mobility aid parking area only and does not take in to account the maneuvering room required by various types of mobility aids. Also, the area necessary for a driver or an assistant to access the tie-down equipment must be accounted for in the layout. ConnDOT wants to provide more space than is required. The proposed securement system, design and layout must be submitted with your proposal.

Maneuvering room inside the bus shall accommodate easy travel for a passenger in a wheelchair from the loading device through the bus to the designated parking area, and back out. No portion of the wheelchair or its occupant shall protrude into the normal aisle of the bus when parked in the designated parking space(s). As a guide, no width dimension should be less than 34 inches. From the aisle to the raised seat areas requiring 90 degree turns of wheelchairs should have a clearance arc dimension no less than 45 inches and in the parking area where 180 degree turns are expected, space should be clear in a full 60 inch diameter circle. A vertical clearance of 12 inches above the floor surface should be provided on the outside of turning areas for wheelchair footrest.

ADA priority seating signs as required and defined by 49 CFR, Part 38.27 shall be provided to identify the seats designated for passengers with disabilities. Requirements for a public information system in accordance with 49 CFR, Part 38.35 shall be provided. Requirements for a stop-request passenger signal in accordance with 49 CFR, Part 38.37 shall be provided. Requirements for exterior destination signs in accordance with 49 CFR, Part 38.39 shall be provided.

EXTERNAL ROUTE DISPLAY SIGN SYSTEM

A Twin Vision all LED, automatic External Route Display sign system, or equal, shall be furnished and installed in the bus by the vendor.

The sign located near the front door shall not block the operator's critical horizontal line of sight. Display areas of destination signs shall be clearly visible in direct sunlight and/or at night. Signs shall be installed to allow replacement by a mechanic within thirty (30) minutes. Parts shall be commercially available.

All signs shall be controlled via a single HMI. In the absence of a single Mobile Data Terminal (MDT), the HMI shall be conveniently located for the bus operator in Area 5 of the Operator's Workstation Control and Instrument Array, mounted in such a manner that will not pose any safety hazard.

The system shall consist of:

Front Sign: 16 rows x 160 columns; display height minimum 7.9 inch, display width 63 inches
Side Sign: 16 rows x 160 columns; display height minimum 6.1 inch, display width 47 inches
Rear Sign: 16 rows x 48 columns; display height minimum 6.1 inch, display width 17 inches
Block Number Sign (dash mounted): 14 rows x 36 columns; display height minimum 4.2 inches, display width 14 inches (It shall be capable of both automatic and direct entry programming)
OCU
Cables and Accessories

The Front Sign shall be mounted on the front of the bus, near the top edge of the body, behind windshield protection, and in an enclosed but accessible compartment provided by the Bus manufacturer.

The Side Sign shall be located on the right side of the bus near the front door either mounted near the top of an existing window or in a separate enclosed but accessible weather-proof compartment provided by the bus manufacturer.

The Rear Sign (external) shall be mounted on TwinVision supplied brackets on the rear of the vehicle on an appropriate sized cutout provided by the bus manufacturer.

The Block Number Sign shall be mounted on the front dash on the right side of the bus near the front door.

The entire display area of all signs shall be readable in direct sunlight, at night, and in all lighting conditions between those lighting extremes, with evenly distributed illumination appearance to the un-aided eye.

The system shall be microprocessor-based utilizing approved bi-directional serial communications, such as SAE J1708 between system components, and shall utilize error detection techniques within the communication protocol.

The sign system shall be controlled by one (1) primary controller located in the operator control unit. The system shall be capable of communicating with, and/or controlling additional information devices, such as Interior information Signs, Voice Annunciation devices, etc... The system shall provide for destination and/or public relations (P/R) message entry.

Flash memory integrated circuits shall be capable of storing and displaying up to 10,000 message lines. Message memory shall be changeable by the use of a "USB Key" sized according to the message listing noted herein. Download via a PCMCIA card or MTU is not desirable.

The system shall have the ability to sequentially display multi-line destination messages, with the route number portion remaining in a constant "on" mode at all times, if so programmed. It shall also be capable of accepting manual entry of Route Alpha/Numeric information on the dash sign.

The various signs shall be programmable to display independent messages or the same messages; up to two (1) destination messages and one (1) public relations message shall be pre-selectable. The

operator shall be able to quickly change between the pre-selected messages without re-entering a message code. Public relations messages shall be capable of being displayed alternately with the regular text and route messages or displayed separately.

An emergency message shall be activated by a push button or toggle switch in a location to be approved by ConnDOT. The emergency message shall be displayed on signs facing outside the vehicle while signs inside the vehicle, including the OCU display, remain unchanged. The emergency message shall be canceled by entering a new destination code, or power cycling (after removal of the emergency signal).

The programming software shall provide means of adjusting the length of time messages are displayed in 0.1 second increments up to 25 seconds.

Power to the Sign system shall be controlled by the Master Coach Run Switch. The signs shall operate in all positions of this switch except off. The signs shall be internally protected against voltage transients and RFI interference to ensure proper operation in the local environment.

All Sign displays shall consist of pixels utilizing High Intensity LED's, for superior outdoor environmental performance of Amber illumination appearance of light wavelength of 590 NM. LED should be made of AlInGaP II, superior UV resistant Epoxy lens and superior resistance to the effects of moisture. Each pixel shall have a dedicated LED for illumination of that pixel in all lighting conditions. The sign system shall have multi-level intensity changes, which adjust automatically as a function of ambient lighting conditions. There shall be no requirement for any fan or any specialized cooling or air circulation.

This LED shall be mounted such as to be visible directly to the observer positioned in the viewing cone, allowing for full readability 65 degrees either side of the destination sign centerline. The LEDs shall be the only means of illumination of the sign system. The LED illumination source shall have an operating life MTBF of not less than 100,000 hours. Each LED shall not consume more than 0.02 watts.

The characters formed by the System shall meet the requirements of the ADA of 1990 Reference 49 CFR Section 38.39.

All Signs shall be enclosed in a manner such as to inhibit entry of dirt, dust, water and other contaminants during normal operation or cleaning. The front, side and block number signs shall be a solid framed design with an integral metal louvered arrangement for optimal optical viewing and maximum thermal dispersion. Access shall be provided to clean the inside of the Bus window(s) associated with the Sign and to remove or replace the Sign components. Access panels and display boards shall be mounted for ease of maintenance/replacement. Any exterior Rear Sign enclosure used shall be made of Polycarbonate material containing fiberglass reinforcement. The vehicle manufacturer shall comply with the Sign manufacturer's recommended mounting, mounting configuration, and installation procedures to assure optimum visibility and service accessibility of the Sign System and System components.

All electronic circuit boards used in the Sign System shall be conformal coated to meet the requirements of military specification MIL-I-46058C. All Sign System light board components shall be certified to have been subjected to a "burn-in" test of a minimum of twelve (12) hours operation in a temperature of 150°F prior to final inspection.

The Front Sign message shall be readable by a person with 20/20 vision from a distance not less than 350 feet for signs of display height greater than 8 inches and from a distance not less than 275 feet for display heights less than 8 inches. The Front Sign shall have a viewing cone of equal readability at 65 degrees on either side of a line perpendicular to the center of the mean plane of the display. The intensity of the illumination of the display pixels shall appear, to the naked eye, to be approximately uniform throughout the full viewing cone.

The Side Sign message shall be readable by a person with 20/20 vision, from a distance of not less than 110 feet. The Side Sign shall have a viewing cone of equal readability at 65 degrees on either side of a line perpendicular to the center of the mean plane of the display. The intensity of the illumination of the display pixels shall appear, to the naked eye, to be approximately uniform throughout the full viewing cone.

The Rear Sign shall be capable of independently displaying alpha-numeric characters. Its message shall be readable by a person with 20/20 vision, from a distance of not less than 225 feet. The Rear Sign shall have a viewing cone of equal readability at 65 degrees on either side of a line perpendicular to the center of the mean plane of the display. The intensity of the illumination of the display pixels shall appear, to the naked eye, to be approximately uniform throughout the full viewing cone.

The Block Number Sign shall be readable by a person with 20/20 vision from a distance not less than 65 feet and shall have a viewing cone of equal readability at 65 degrees on either side of a line perpendicular to the center of the mean plane of the display. The intensity of the illumination of the display pixels shall appear, to the naked eye, to be approximately uniform throughout the full viewing cone. The Block Number Sign shall be capable of displaying up to four (4) alpha-numeric characters (26 Upper Case letters and 0-9 numerals) which will be independently controlled from the Destination Sign System operator control unit (OCU keyboard) or through the J1708 command sequences. It will also be independent of the destination sign message code that is preprogrammed into the sign system.

The OCU shall be used to view and update display messages. It shall be recess mounted on the bus vehicle Front Sign compartment access cover or door. The OCU shall utilize a multi-key conductive rubber pad keyboard and be designed for transit operating conditions.

The OCU shall contain a display of at least two (2) lines of twenty (20) character capability. The OCU shall contain an audio annunciator that beeps indicating that a key is depressed. The OCU shall continuously display the message associated with the selected destination readings (except the emergency message feature as noted above).

The OCU shall also contain the capability to manually select the Block Number Sign information (from 1 to 4 Alpha-Numeric characters) to be sent to the Block Number Sign, independent of any pre-programmed destination sign message information.

An auxiliary J1939 port shall be made available on the OCU so that auxiliary J1939 commands may be provided to the Electronic Destination Sign System.

A Microsoft WINDOWS® programming software package shall be supplied, under limited-use license, to generate message lists for the Sign System.

The programming software package shall use the capacity of an IBM 486 or higher PC/AT, having not less than 16 megabyte of RAM, to allow the USB memory drive to be programmed directly from the PC through a USB Port.

The program shall be designed for ease of deleting and adding messages to a destination Sign listing in a WINDOWS® 2000/XP Operating Environment. The Programming Software shall be intuitive, of design to facilitate ease of training, and use context-sensitive help features. Reasonable on-site training support shall be provided with the software.

This software will provide capability for both standard editing mode and freestyle editing mode. The software should be capable of entering one (1) destination for all signs and automatically place the information in the correct positioning. It should also allow for creation of a custom displays by varying spacing between characters, words, or other message elements. This software also allows for creation of graphic displays with or without text by selecting preprogrammed graphic sign images and by allowing use of multiple fonts within the same message and graphic symbols placed anywhere within

the display area. The software should be backward compatible to support all other sign configurations within the fleet that were produced by the same manufacturer.

The Sign System shall be reprogrammable on the vehicle with the use of a USB Key. A key slot shall be provided on the OCU face for this purpose. The maximum reprogramming time for a 10,000 line listing shall be one (1) minute.

OPERATOR'S WORK AREA

The operator's work area shall be designed to minimize glare to the extent possible. Objects within and adjacent to this area shall be matte black or dark gray in color wherever possible to reduce the reflection of light onto the windshield. The use of polished metal and light-colored surfaces within and adjacent to the operator's area shall be avoided. Such objects include dash panels, switches and controls, cowlings, windshield wipers and arms, barriers and modesty panels, fare stanchions, access panels and doors, fasteners, flooring, ventilation and heating ducting, window and door frames, and visors. Interior lighting located ahead of the standee line shall be controlled by the operator.

A suitable hanger shall be installed in a convenient approved location for the operator's overcoat.

A rugged device shall be provided to securely hold the operator's drink container, which may vary widely in diameter. It must be mounted within easy reach of the operator and must have sufficient vertical clearance for easy removal of the container. When the container is in the device, the operator's view of the road must not be obstructed and leakage from the container must not fall on any switches, gauges or controls.

An enclosed Operator storage area shall be provided with a positive latching door and lock; minimum approximate size: 14 in. x 14 in. x 14 in.

An adjustable roller type sunscreen shall be provided over the operator's windshield and the operator's side window. The sunscreen shall be capable of being lowered to the midpoint of the operator's window. When deployed, the screen shall be secure, stable and shall not rattle, sway or intrude into the operator's field of view due to the motion of the coach or as a result of air movement. Once lowered, the screen shall remain in the lowered position until returned to the stowed position by the operator.

All switches and controls necessary for the safe operation of the bus shall be conveniently located in the operator's area and shall provide for ease of operation. Switches and controls shall be divided into basic groups and assigned to specific areas, in conformance with SAE Recommended Practice J680, Revised 1988, Location and Operation of Instruments and Controls in Motor Truck Cabs, and be essentially within the hand reach envelope described in SAE Recommended Practice, J287, Driver Hand Control Reach. Operational controls, instrumentation, switches, and other system controls shall not be mixed with ventilation diffusers and non-operational controls or readouts. Controls shall be located so that boarding passengers may not easily tamper with control settings.

The door control, kneel ramp control, windshield wiper/washer controls, and run switch shall be in the most convenient operator locations. They shall be identifiable by shape, touch, and permanent markings. Doors shall be operated by a single control, conveniently located and operable in a horizontal plane by the operator's left hand. The kneel ramp control shall also be located close to the door control so that it too can be operated by the Operator's left hand. The setting of these controls shall be easily determined by position and touch.

All panel-mounted switches and controls shall be marked with easily read identifiers. Text designating position (on/off) shall be a minimum of 9 points, identifying legends shall be a minimum of 11 points. Extremely condensed or italic type fonts shall not be used. Graphical symbols shall conform to SAE Recommended Practice J2402, Road Vehicles - Symbols For Controls, Indicators, and Tell Tales, where available and applicable. Color of switches and controls shall be dark with contrasting typography or symbols. Red type on a black or gray field (or vice versa) shall not be used. Mechanical switches and controls shall be replaceable, and the wiring at these controls shall be serviceable from

the vestibule or the operator's seat. Switches, controls, and instruments shall be dust and water resistant consistent with the bus washing practice described previously.

Operator Controls - The following list for Normal Bus Operation identifies bus controls used to operate the bus safely and efficiently. These controls are frequently used or they are critical to the operation of the bus. They should be located within easy reach of the operator. The operator should not be required to stand or turn his/her body to view or to actuate these controls that include:

Engine Start Switch or Button	Four Position Master Run Switch
Transmission Shift Select	Parking Brake
Door	High Beam
Turn Signals	Hazard Lights
Defroster	Kneel & Ramp Controls
Windshield Wiper	Instrument Panel Lighting Intensity

Accelerator and brake pedals shall be designed for ankle motion. Foot surfaces of the pedals shall be faced with wear-resistant, nonskid, replaceable material.

The Master Run Switch shall be a four-position rotary switch with the following functions:

OFF - All electrical systems off, except power available for the passenger interior lighting, stoplights, turn lights, hazard lights, radio, silent alarm, horn, fare box, fire detection equipment, engine compartment lights, auxiliary heater, if provided and electronic equipment that require continuous energizing. A timer circuit shall be provided to provide battery cut-off (except for the farebox) after two (2) hours. Electrical loads resulting from ConnDOT's devices, such as, farebox, GPS, radio, etc., shall not exceed 1.5 amps with the master run switch in the OFF position.

CL/ID - All electrical systems off, except those listed in OFF and power to destination signs, interior lights and marker lights.

RUN - All electrical systems and engine on, except the headlights, parking lights and marker lights. Daytime running lights (DRL) shall be provided and shall be on. (Daytime running lights only on when the engine is on).

NITE/RUN - All electrical systems and engine on.

The door control shall be located on the street side of the operator's area within the hand reach envelope described in SAE Recommended Practice, J287, Driver Hand Control Reach. The front door shall remain in commanded state position even if power is removed or lost. The rear door shall stay open until the Operator control is activated.

Operation of, and power to, the passenger doors shall be completely controlled by the operator. Power to rear doors shall be controlled by the operator.

A control or valve in the operator's compartment shall shut off the power to, and/or dump the power from, the front door mechanism to permit manual operation of the front door with the bus shut down. A master door switch which is not within reach of the seated operator when set in the "Off" position shall close the doors, deactivate the door control system, release the interlocks, and permit only manual operation of the doors.

The operator's area shall have a light to provide general illumination and it shall illuminate the half of the steering wheel nearest the operator to a level of 10 to 15 foot-candles. This light shall be operator controlled by a toggle switch located on the operator's control panel or other approved location.

(1) A three-position toggle switch, labeled "Interior Lights; on (at top), Off, Normal" shall control the lights.

- "On" turns on all lights in any Master Switch position
- "Off" turns off lights except as noted in (2) and (3)
- "Normal" turns on all lights in "Night Run" & "Night Park" except as noted in (2).

(2) The first light on each side (behind the Operator and the front door) is normally turned on only when the front door is opened, in "Night Run" and "Night Park." As soon as the door closes, these lights shall go out. These lights shall be turned on at any time if the toggle switch is in the "On" position.

(3) To help eliminate windshield reflection on suburban roads where street lighting is at a low level, the second light on each side, when "Night Run" or "Night Park" is selected, shall be controlled by the toggle switch; off in "Off" and on in "Normal." These lights shall be turned on at any time if the toggle switch is in the "On" position.

(4) All interior lighting shall be turned off whenever the transmission selector is in the reverse and engine run switch is in the "On" position.

Operator Controls - The following list of Special bus controls identifies the controls to initiate system diagnostics, aid the physically handicapped passenger, and control mirrors and speakers, etc. They are less often used than those in Normal Bus Operation. These controls should be within easy reach for viewing and actuation by the operator:

ABS Diagnostics Test	Engine Diagnostic Test
Stop Engine Override	Chime
Drivers Fan	Fast Idle
Mirror Heater (Opt.)	Public Address System
Drivers HVAC	Diagnostic Light Panel Test
Fire Suppression (Opt.)	Destination Sign On/Off (Opt.)
Hill Holder	Remote Mirror Control (Opt.)
Retarder	Kneel/Ramp Control
Heater Blower Interlock	

Operator Controls - The following list of Passenger Comfort Controls identifies the bus controls for the interior bus temperature, lighting, air circulation, etc. The settings of these controls are changed infrequently. The operator should be able to see and actuate these controls with minimal effort.

Climate Control	Temperature Select	Aisle Lights
Interior HVAC	Blower	
Interior Lights	Dome Lights	

The Figure below is provided as an illustrative guide to the desired instrument and control grouping:

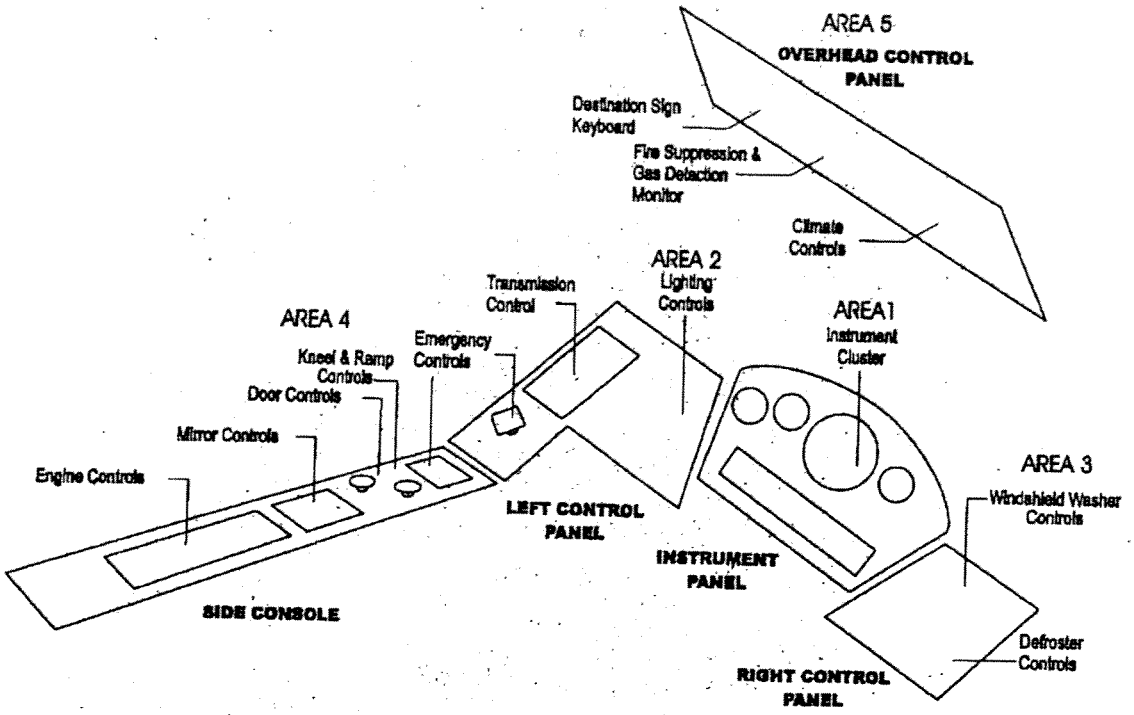
Area 1:Operational gauges - speedometer, air pressure (primary and secondary), voltmeter(s), fuel and diagnostics shall be located immediately in front of the operator's field of view.

Area 2:Operational controls and switches, including but not limited to emergency controls and flashers, transmission controls, and lighting switches, located adjacent the left side of the instruments.

Area 3:Operational controls and switches, including but not limited to washer controls, operator's climate controls, located adjacent to the right side of the instruments.

Area 4:Secondary operating controls including door, kneel and ramp switches, mirror and engine controls, located to the left of the operator ahead of the Seat Reference Point of the 5 percentile female.

Area 5:System function controls, including destination sign keypad, cabin climate controls, fire suppression, located on the operator's centerline, above operator's upper sight cutoff line.



The angle of the accelerator pedal shall be determined from a horizontal plane regardless of the slope of the cab floor. The accelerator pedal shall be positioned at an angle of 27 to 35 degrees at the point of initiation of contact, and extend downward to an angle of 10 to18 degrees at full throttle. The floor mounted accelerator pedal shall be 10 to 12 inches long and 3 to 4 inches wide. The force to depress the accelerator pedal shall be measured at the midpoint of the accelerator. The accelerator force shall be no less than 7 foot pounds and no more than 9 foot pounds.

To preclude movement of the bus, an accelerator interlock shall lock the accelerator in the closed position and a brake interlock shall engage the service brake system when the rear door control is activated. The braking effort shall be adjustable with hand tools. Rear doors shall not open until bus speed is below 2 mph. An accelerator interlock shall lock the accelerator in the closed position whenever front doors are open.

The angle of the brake pedal shall be determined from a horizontal plane regardless of the slope of the cab floor. The brake pedal shall be positioned at an angle of 27 to 35 degrees at the point of initiation of contact, and extend downward to an angle of 20 to 28 degrees at full depression. The floor mounted brake pedal shall be 10 to12 inches long and 3 to 4 inches wide. The force to depress the brake pedal shall be measured at the midpoint of the brake pedal. The brake pedal force shall be no less than 10 foot pounds and no more than 50 foot pounds.

The accelerator and brake pedals shall be positioned such that the spacing between them, measured at the heel of the pedals, is between 1 and 2 inches. The location of the brake and accelerator pedals shall be determined by the manufacturer, based on space needs, visibility, lower edge of windshield, and vertical H-point. The brake pedal shall have a 0 degree lateral angle, and the accelerator shall have a 12 degree lateral angle to coincide with the position of the operator's leg as it moves outward to operate the accelerator pedal.

The angle of the turn signal platform shall be determined from a horizontal plane, regardless of the slope of the cab floor. The turn signal platform shall be angled at a minimum of 10 degrees and a maximum of 28 degrees. It shall be located no closer to the seat-front than the heel point of the accelerator pedal. Turn signal controls shall be floor-mounted, foot-controlled, waterproof, heavy-duty, momentary contact switches. High Beam, Hazard, and PA Controls shall be floor mounted with the same requirements as the Turn Signal controls.

The speedometer, air pressure gauge(s), and certain indicator lights shall be located in Area 1 of the Instrument Panel immediately ahead of the steering wheel. The steering wheel spokes or rim shall not obstruct the operator's vision of the instruments when the steering wheel is in the straight-ahead position. Illumination of the instruments shall be simultaneous with the marker lamps. Glare or reflection from the windshield, side window, or front door windows from the instruments, indicators, or other controls shall be minimized. Instruments shall be easily readable in direct sunlight or shielded in such a manner that sunlight does not adversely affect legibility. Instrument covers shall be non-reflective, without electrostatic qualities that attract and hold dust, and shall be resistant to scratching or hazing as a result of cleaning. Text shall be a minimum of 11 points. Extremely condensed or italic type fonts shall not be used. The color of the display field shall be dark with contrasting typography. Indicator lights or illuminated symbols or typography immediately in front of the operator shall be restricted to those concerned with the operation of the vehicle, as identified in the following table.

Visual Indicator	**Audible Alarm**	**Condition**
Back-Up	Backup Alarm	Reverse gear is selected
Hazard	Click	Four-way flashers activated
DRL	None	Daytime Running Lights
High Beam	None	Headlamp high beams activated
Kneel	Kneel Horn	Suspension kneeling system activated
Left Turn Signal	Click	Left turn signal activated
Parking Brake	None	Parking brake is activated
Rear Door	None	Rear passenger door is not closed and locked
Right Turn Signal	Click	Right turn signal activated
Stop Request	Chime	Passenger stop request has been activated
Wheelchair Request	Double Chime	Passenger wheelchair stop request activated

The instrument panel shall include an electronic speedometer indicating no more than 80 mph and calibrated in maximum increments of 5 mph. The speedometer shall be a rotating pointer type, with a dial deflection of 220 to 270 degrees and 40 mph near the top of the dial. The speedometer shall be sized and accurate in accordance with SAE Recommended Practice J678. The speedometer shall equipped with an odometer with a capacity reading no less than 999,999 miles.

The instrument panel shall also include air brake reservoir pressure gauge(s) with indicators for primary and secondary air tanks and voltmeter(s) to indicate the operating voltage across the bus batteries. The instrument panel and wiring shall be easily accessible for service from the operator's seat or top of the panel. The diagnostic panel shall be separately removable and replaceable without damaging the instrument panel or gauges. Wiring shall have sufficient length and be routed to permit service without stretching or chafing the wires.

The bus shall be equipped with visual and audible alarms linked to an on-board diagnostic system that will indicate conditions that require immediate action by the operator to avoid an unsafe condition or prevent further damage to the bus. The indicator panel shall be located in Area 1 of the Instrument Panel. The intensity of visual indicators shall permit easy determination of on/off status in bright sunlight or shielded in such a manner that sunlight does not adversely affect legibility. Indicator illumination shall not cause a visibility problem at night. All indicators shall have a method of momentarily testing their operation. The audible alarm shall be tamper resistant and shall have an outlet level between 80 and 83 dBA when measured at the location of the operator's ear. Wherever

possible, sensors shall be of the closed circuit type, so that failure of the circuit and/or sensor shall activate the malfunction indicator.

To avoid unnecessary confusion and anxiety on the part of the operator, on-board displays visible to the operator should be limited to indicating the status of those functions described herein that are necessary for the safe operation of the bus and protection of assets. All other indicators needed for diagnostics and their related interface hardware shall be concealed and protected from unauthorized access. Malfunction and other indicators listed in the following table shall be supplied on all buses.

Visual Indicator	Audible Alarm	Condition or Malfunction
ABS	None	ABS System Malfunction
A/C Stop	None	Compressor stopped due to high/low pressure or loss of refrigerant
Check Engine	None	Engine Electronic Control Unit detects a malfunction
Check Transmission	None	Transmission Electronic Control Unit detects a malfunction
Fire	Bell	Over-temperature condition in engine compartment
Alternator Fail	None	Loss of alternator output
Hot Engine	Buzzer	Excessive engine coolant temperature
Low Air	Buzzer	Insufficient air pressure in either primary or secondary reservoirs
Low Oil	Buzzer	Insufficient engine oil pressure
Low Coolant	Buzzer	Insufficient engine coolant level
Wheelchair Ramp	Beeper	Wheelchair ramp is not stowed and disabled

The bus shall be equipped with a variable speed windshield wiper for each half of the windshield. For non-synchronized wipers, separate controls for each side shall be supplied. A variable intermittent feature shall be provided to allow adjustment of wiper speed for each side, or a synchronized pair, ranging approximately 5 to 25 cycles per minute. If powered by compressed air, exhaust from the wiper motors shall be muffled or piped under the floor of the bus. No part of the windshield wiper mechanism shall be damaged by manual manipulation of the arms. At 60 mph, no more than 10 percent of the wiped area shall be lost due to windshield wiper lift. Both wipers shall park along the inner edges of the windshield glass. Windshield wiper motors and mechanisms shall be easily accessible for repairs or service and shall be removable as complete units. The fastener that secures the wiper arm to the drive mechanism shall be corrosion resistant.

The windshield washer system shall be a dry arm design to deposit washing fluid on the windshield and, when used with the wipers, shall evenly and completely wet the entire wiped area. If powered by compressed air, all fluid shall be purged from the lines after each use of the washers.

The windshield washer system shall have a minimum 3 gallon reservoir, located for easy refilling from outside of the bus and protected from freezing. Reservoir pumps, lines, and fittings shall be corrosion-resistant, and the reservoir itself shall be translucent for easy determination of fluid level.

The Bus Operators seat shall be a Recaro Ergo M (3-pt) or equal.

Seat belts shall be provided across the operator's lap and diagonally across the operator's chest. The operator shall be able to use both belts by connecting a single buckle on the right side of the seat cushion. The belts shall be fastened to the seat and/or the bus structure so that the operator may adjust the seat without resetting the seat belt. Seat belts shall be stored in automatic retractors.

Seat belts shall be extended length to accommodate operators of all sizes and stored in a hard plastic housing. The seatbelt buckle shall have an easy top button design to provide the driver with quick and easy release.

The operator's seat shall be contoured to provide maximum comfort for extended period of time. Cushions shall be fully padded with at least 3 inches of closed-cell polyurethane foam or material with equal properties, in the seating areas at the bottom and back. The seat material shall be black high grade vinyl.

A four way adjustable headrest with six position vertical adjustment shall be provided.

ELECTRICAL

The electrical system and its electronic components shall be capable of operating in the area of the vehicle in which they will be installed. Electrical and electronic equipment shall not be located in an environment that will reduce the performance or shorten the life of the component or electrical system. No vehicle component shall generate, or be affected by, EMI/RFI that can disturb the performance of electrical/electronic equipment as defined in SAE J1113.

All electrical/electronic hardware shall be accessible and replaced by a mechanic in thirty (30) minutes. It shall be mounted on an insulating panel to facilitate replacement. The mounting of the hardware shall not be used to provide the sole source ground, and all hardware shall be isolated from potential EMI/RFI.

All electrical/electronic hardware mounted in the interior of the vehicle shall be inaccessible to passengers and hidden from view unless intended to be viewed. The hardware shall be mounted in such a manner as to protect it from splash or spray. All electrical/electronic hardware mounted on the exterior of the vehicle, that is not designed to be installed in an exposed environment, shall be mounted in a sealed enclosure. All electrical/electronic hardware and its mounting shall comply with the shock and vibration requirements of SAE J1455.

The system shall supply a nominal 12v and/or 24v of direct current (DC). Batteries, except those used for auxiliary power, shall be easily accessible for inspection and service from the outside of the vehicle only.

Two 8D battery units conforming to SAE Standard J537 shall be provided. Each battery shall have a minimum of 1150 cold cranking amps. Each battery shall have a purchase date no more than one hundred twenty (120) days from date of release, and shall be fully maintained prior to shipment to ConnDOT.

Positive and negative terminal ends on the Baseline 8D batteries shall have different size studs to prevent incorrect installation. The battery terminal ends and cables shall be color-coded with red for the primary positive, black for negative, and another color for any intermediate voltage cables. Battery cables shall be flexible and sufficiently long to reach the batteries with tray in the extended position without stretching or pulling on any connection and shall not lie directly on top of the batteries. Except as interrupted by the master battery switch, battery and starter wiring shall be continuous cables with connections secured by bolted terminals; and shall conform to specification requirements of SAE Standard J1127 –Type SGT or SGX and SAE Recommended Practice J541.

A KBI EC501.2 KAPower Module supercapacitor rated at 24Kw and 300° F or equal unit shall be installed in parallel with the batteries as an aid to engine start. The module shall be actuated upon engine start via the Multiplex system and through a solenoid. The solenoid shall be engaged for a period of one minute. Electrical cables shall be 4/0 and shall not exceed 10 feet in length. The module shall be enclosed within a stainless steel box, and the solenoid shall not be exposed to environmental hazards. A decal shall be installed on the outside of the box to indicate danger of high amp equipment.

A jump-start connector shall be provided in the engine compartment equipped with dust cap and adequately protected from moisture, dirt and debris.

A 110v ac to 12v dc unit with automatic battery disconnect shall be built into the bus so that when the bus is plugged in from outside power it can provide internal electrical power to the vehicle. The system would be similar to providing a shore power hookup connection to a boat.

A single master switch shall be provided near the battery compartment for the disconnecting of all battery positives (12v & 24v) except for safety devices such as fire suppression system and other systems as specified. The location of the master battery switch shall be clearly identified on the exterior access panel, be accessible in less than 10 seconds for de-activation, and prevent corrosion from fumes and battery acid when the batteries are washed off or are in normal service. Turning the master switch "OFF", with the power plant operating, shall not damage any component of the electrical system. The master switch shall be capable of carrying and interrupting the total circuit load. The batteries shall be equipped with a single switch for disconnecting both 12v & 24v power.

The power generating system shall maintain the charge on fully charged batteries, except when the vehicle is at standard idle with a total alternator load exceeding 70 percent of the alternator nameplate rating. Use of fast idle shall maintain a charge on fully charged batteries so long as the total alternator load does not exceed 90 percent of the alternator nameplate rating. Alternator over-voltage output protection shall be provided.

Power distribution to all equipment requiring dedicated power and ground wiring to the batteries shall be accomplished by using power bus bars consisting of either a solid copper bar or heavy-duty terminal strip. One bus bar for each voltage potential, including ground, shall be located as close to the source of the potential as possible. Cabling from the bus bars to the equipment must be sized to supply the total current requirements with no greater than a 5 percent volt drop across the length of the cable.

All branch circuits, except battery-to-starting motor and battery-to-generator/alternator circuits, shall be protected by circuit breakers or fuses sized to the requirements of the load. Electronic circuit protection for the cranking motor shall be provided to prevent engaging of the motor for no more than thirty (30) seconds at a time to prevent overheating. The circuit breakers or fuses shall be easily accessible for authorized personnel. Fuses shall be used only where it can be demonstrated that circuit breakers are not practicable. Any manually re-settable circuit breakers shall provide visible indication of open circuits.

Circuit breakers or fuses shall be sized to a minimum of 15 percent larger than the total circuit load current. The current rating for the wire used for each circuit must exceed the size of the circuit protection being used.

The battery shall be grounded to the vehicle chassis/frame at one (1) location only, as close to the batteries as possible. When using a chassis ground system, the chassis shall be grounded to the frame in multiple locations, evenly distributed throughout the vehicle to eliminate ground loops. No more than four (4) ground connections shall be made per ground stud. Electronic equipment requiring an isolated ground to the battery (i.e., electronic ground) shall not be grounded to the chassis.

All power and ground wiring shall have double electrical insulation, shall be waterproof, and shall conform to specification requirements of SAE Recommended Practice J1127, J1128 and J1292. Double insulation shall be maintained as close to the junction box, electrical compartment, or terminals as possible.

Wiring shall be grouped, numbered, and color-coded. Wiring harnesses shall not contain wires of different voltage classes unless all wires within the harness are insulated for the highest voltage present in the harness. Kinking, grounding at multiple points, stretching, and exceeding minimum bend radius shall be prevented.

Strain-relief fittings shall be provided at points where wiring enters all electrical compartments. Grommets or other protective material shall be installed at points where wiring penetrates metal

structures outside of electrical enclosures. Wiring supports shall be protective and non-conductive at areas of wire contact and shall not be damaged by heat, water, solvents, or chafing.

To the extent practicable, wiring shall not be located in environmentally exposed locations under the vehicle. Wiring and electrical equipment necessarily located under the vehicle shall be insulated from water, heat, corrosion, and mechanical damage. Where feasible, front to rear electrical harnesses should be installed above the window line of the vehicle.

All wiring harnesses over five (5) feet long and containing at least five (5) wires shall include 10 percent (minimum one [1]) excess wires for spares. This requirement for spare wires does not apply to data links and/or communication cables. Wiring length shall allow end terminals to be replaced twice without pulling, stretching, or replacing the wire. Except for large wires such as battery cables, terminals shall be crimped according to connector manufacturer's recommendations for techniques and tools to the wiring and may be soldered only if the wire is not stiffened above the terminal and no flux residue remains on the terminal. Battery cable connectors shall be crimped and soldered.

Terminals shall be crimped, corrosion-resistant and full ring type or interlocking lugs with insulating ferrules. When using pressure type screw terminal strips, stranded wire only shall be used. Insulation clearance shall ensure wires have a minimum of "visible clearance" and a maximum of two (2) times the conductor diameter or 1/16 inch, whichever is less. When using shielded or coaxial cable, upon stripping of the insulation, the metallic braid shall be free from frayed strands that can penetrate the insulation of the inner wires.

Ultra-sonic and T-splices may be used with 7 AWG or smaller wire. When a T-splice is used it shall meet these additional requirements: include a mechanical clamp in addition to solder on the splice; the wire supports no mechanical load in the area of the splice; and the wire is supported to prevent flexing. All splicing shall be staggered in the harness so that no two (2) splices are positioned in the same location within the harness.

For wiring harness connectors, pins shall be removable, crimp contact type of the correct size, and rated for the wire being terminated. All supply-side terminations shall end in a socket, not a pin. Unused pin positions shall be sealed with sealing plugs. Adjacent connectors shall either use opposing pin genders, different insert orientations, or different connectors to prevent incorrect connections. All cable connectors shall be placed to provide adequate space for ease of removal and disconnection. All electrical connectors subjected to environmental exposure outside the passenger compartment shall be corrosion resistant and splash proof.

All electrical components, including switches, relays, flashers, and circuit breakers, shall be heavy-duty designs with either a successful history of application to heavy-duty vehicles, or design specifications for an equivalent environment. These components shall be replaceable in less than five (5) minutes by a mechanic.

All electric motors shall be of a heavy-duty brushless type. All electric motors shall be easily accessible for servicing.

All relays, controllers, flashers, circuit breakers, and other electrical components shall be mounted in easily accessible electrical compartments. All compartments exposed to the outside environment shall be corrosion resistant and sealed. The components and circuits in each electrical compartment shall be identified and their location permanently recorded on a drawing attached to the inside of the access panel or door. The drawing shall be protected from oil, grease, fuel, and abrasion. The front compartment shall be completely serviceable from the operator's seat, vestibule, or from outside. A rear start and run control box shall be mounted in an accessible location in the engine compartment.

If an electronic component has an internal clock, it shall provide its own battery backup to monitor time when battery power is disconnected.

All electronic component suppliers shall ensure that their equipment is self-protecting in the event of shorts in the cabling, and also in over-voltage and reverse polarity conditions. If an electronic component is required to interface with other components, it shall not require external pull-up and/or pull-down resistors.

Kinking, grounding at multiple points, stretching, and exceeding minimum bend radius shall be prevented.

All wiring to I/O devices, either at the harness level or individual wires, shall be labeled, stamped or color-coded in a fashion that allows unique identification. Labels shall be resistant to rubbing (hot stamped tubing and protected printing are service-proven examples of acceptable labels). Wiring for each I/O device shall be bundled together. If the I/O terminals are the same voltages, then jumpers may be used to connect the common of each I/O terminal.

All wiring that requires shielding shall meet the following minimum requirements. A shield shall be generated by connecting to a ground, which is sourced from a power distribution bus bar or chassis. A shield shall be connected at one (1) location only, typically at one (1) end of the cable. However certain standards or special requirements, such as SAE J1939 or RF applications, have separate shielding techniques that shall also be used as applicable. *Note: A shield grounded at both end forms a ground loop, which can cause intermittent control or faults.* When using shielded or coaxial cable, upon stripping of the insulation, the metallic braid shall be free from frayed strands, which can penetrate the insulation of the inner wires. To prevent the introduction of noise, the shield shall not be connected to the common side of a logic circuit.

RF components, such as radios, video devices, cameras, global positioning systems (GPS), etc, shall use coaxial cable to carry the signal. All RF systems require special design consideration for losses along the cable. Connectors shall be minimized, since each connector and crimp has a loss, which will attribute to attenuation of the signal. Cabling should allow for the removal of antennas or attached electronics without removing the installed cable between them. The corresponding component vendors shall be consulted for proper application of equipment including installation of cables.

Cabling used for microphone level and line level signals shall be 22 AWG minimum with shielded twisted pair. Cabling used for amplifier level signals shall be 18 AWG minimum.

All vehicles shall be equipped with a multiplexing system. The primary purpose of the multiplexing system is control of components necessary to operate the vehicle. This is accomplished by processing information from input devices and controlling output devices through the use of an internal logic program.

Versatility and future expansion shall be provided for by an expandable system architecture. The multiplex system shall be capable of accepting new I/O through the addition of new modules and/or the utilization of existing spare I/O. All like components in the multiplex system shall be modular and interchangeable with self-diagnostic capabilities. The modules shall be easily accessible for troubleshooting electrical failures and performing system maintenance. Multiplex I/O modules shall use solid-state devices to provide extended service life and individual circuit protection.

10 percent of the total number of I/O (or at least one [1] each) at each zone location shall be designated as spares. Zone locations are: (1) behind the rear bulkhead; (2) forward of the bulkhead above the window line; and (3) forward of the bulkhead below the window line.

The multiplex system shall have a proven method of determining its status (system health and input/output status) and detecting either active (Online) or inactive (Offline) faults through the use of on-board visual/audible indicators.

In addition to the indicators, the system shall employ an advanced diagnostic and fault detection system, which shall be accessible via a notebook computer. The multiplex system shall have security

provisions to protect its software from unwanted changes. This shall be achieved through any or all of the following procedures: password protection, limited distribution of the configuration software, limited access to the programming tools required to change the software, and hardware protection that prevents undesired changes to the software.

Provisions for programming the multiplex system shall be possible through a notebook computer. The multiplex system shall have proper revision control to insure that the hardware and software is identical on each vehicle equipped with the system. Revision control shall be provided by all of the following: hardware component identification where labels are included on all multiplex hardware to identify components; hardware series identification where all multiplex hardware displays the current hardware serial number and firmware revision employed by the module; and software revision identification where all copies of the software in service displays the most recent revision number, and a method of determining which version of the software is currently in use in the multiplex system.

PUBLIC ADDRESS SYSTEM

A public address system shall be provided that complies with the ADA requirements of 49 CFR, Part 38.35 and enables the operator to address passengers either inside or outside the bus. Inside speakers shall broadcast, in a clear tone, announcements that are clearly perceived from all seat positions at approximately the same volume level. A speaker shall be provided so announcements can be clearly heard by passengers standing outside the bus near the front door. An operator-controlled switch shall select inside or outside announcements. A separate volume control shall be provided for the outside system if volume adjustment would otherwise be necessary when switching from inside to outside. The system shall be muted when not in use.

A hands-free Clever Devices Speakeasy II or equal microphone system shall be provided with a foot switch activation. The public address system speakers shall be Minneapolis Speaker Company model EN5WI-6WB 5 inch round solid basket, 8 ohm, waterproof, mounted on an 8 ¼ inch x 8 ¼ inch square white grill, or equal.

An input jack and mounting clip shall also be provided in the operator's area for occasional use of a hand held microphone.

VIDEO SECURITY SYSTEM

A MDVR shall be provided in each bus. The MDVR system shall be a Safety Vision RoadRecorder® 6000 PRO type or equal. The MDVR shall be capable of recording ten (10) simultaneous or sequential continuous grayscale or color camera inputs, as well as up to eight (8) opto-isolated sensor channels, plus ten (10) channels of audio input. The MDVR shall have the capacity for up to twenty (20) additional J1708-compatible devices. Inputs are switched by an internal multiplexing system.

The bus digital video security recording system shall not interfere electrically with the operation of the transit bus or with its onboard electronic equipment such as the radio, farebox, engine controls, transmission or other electronic equipment. Furthermore, the unit shall be FCC listed and approved. The digital video recorder shall be installed in an appropriate secure location approved by ConnDOT, preferably on the "driver's side", so as to minimize its physical exposure and also to reduce shock and impact.

The digital video camera system shall be a high performance video monitoring system designed specifically for installation in transit buses. Features of the system shall include digital recording, rugged camera enclosures, versatile equipment enclosures, and the latest video technologies for capturing and retaining high quality images. The on-board digital video camera system shall perform mobile monitoring and surveillance of transit buses utilizing an end-to-end digital recording approach. The system shall be activated through the transit bus' master switch. When the transit bus is started, the digital recorder acquires and stores data from cameras. On a routine basis, recording may stop following a pre-programmed period or when the transit bus master switch is off and the system stands idle.

The system shall be installed according to industry standards meeting SAE recommended practices. All cables, wiring, interconnections, switches, and circuit breakers/fuses shall be heavy-duty and specifically designed for their purposes and automotive application. The selected wire sizes and insulation shall be based on the current carrying capability voltage drop, mechanical strength temperature and flexibility requirements. Video and audio wires selected shall be gauged to minimize signal loss.

A protective filtering device shall be installed to protect the video system and its memories from electrical fluctuation typically found in a transit bus including, but not limited to, over voltage, under voltage, transient, power surge/dip during engine or other transit bus equipment startup, alternator noises, etc. It is important that the filtering device provides sufficient and proper protection to the video camera equipment supplied under this contract.

The buses in this procurement shall each come equipped with seven (7) operational high quality (500 line resolution) color, wide angle lens cameras installed in aesthetically pleasing enclosures. The cameras shall automatically switch from color to black & white in low light conditions. The enclosures shall be vandal resistant, secure, lockable, shock-resistant, dust resistant and weather and water-resistant and shall be made of impact-resistant non-toxic material. The cameras shall be installed as follows:

- Facing the front door
- Facing the rear door
- Facing out the windshield (driver eye view)
- Facing down the aisle from the front to the back of the bus
- Located abeam the back door facing the back bus platform
- On the outside curb side of the bus behind the rear door facing back to front
- On the outside driver side of the bus over the driver side window facing front to back

Digital video recorders, multiplexers, power converters/inverters and all other required electronic equipment shall be enclosed within a low-profile enclosure. The equipment enclosure shall be mounted so that it does not obstruct customer traffic flow, interfere with the transit bus operator, or create a safety hazard. The equipment enclosure shall be made of impact-resistant non-toxic material, designed to withstand blows, impacts, shock and vibration. The enclosure shall be fully enclosed, lockable, vandal-resistant, dust-resistant, water-resistant and designed to allow for temperature compensation through the use of cooling fans or other means. All locks, enclosures and cabinets utilized throughout the video system shall be keyed alike.

The design of enclosure shall allow for the quick and easy installation and removal of electronic equipment from within the enclosure, and all connectors shall terminate at a bulkhead board (Termination Board). Enclosure shall be designed to allow for any type of mounting, floor mount, roof mount or wall mount. The design of the equipment enclosure and mounting locations shall be approved at pre-production.

The MDVR shall operate on 9 to 36v DC power, with a unit operational draw of 2.0 amperes at 24v, not including cameras. Operational draw with cameras is between 3.0 and 5.0 amperes, depending on cameras. All cables and connectors to and from the MDVR shall conform to SAE standards.

The MDVR shall not exceed the physical dimensions of 4.5 inches high, 9.0 inches deep, and 7.0 inches wide, exclusive of enclosure and mounting brackets.

The MDVR shall not exceed 9½ pounds, exclusive of removable hard drive.

The operating temperature of the MDVR shall be from -40°F to 149°. The MDVR shall have a recording range of 41°F to 131°F and withstand humidity to 90 percent condensing.

The MDVR shall be capable of withstanding shock pulses of up to 20 G-forces per 11ms period operating and 40 G-forces per 11ms period non-operating.

The MDVR shall be capable of being mounted in any orientation without detriment to its operation.

The MDVR shall have one (1) Ethernet port to allow external programming and system diagnostics. Built-in software shall perform full and continuous system diagnostics and is capable of reporting failures.

The MDVR clock shall operate independently of the main power supply and shall have a minimum five (5) year operational lifetime before battery change is required. Clock drift shall be no more than one (1) minute per six (6) months. The MDVR shall be capable of updating and synchronizing the entire fleet of onboard clocks through a GPS interface.

Dates are to be pre-programmed to the year 2030, and shall take into account all leap years and daylight savings time changes automatically without external intervention. The clock data is digitally inserted into the image/sensor data stream prior to storage to hard disk.

The MDVR shall require no operator interface other than the Master Switch operation to effectuate operation, initiate shutdown, maintain the system, service or program the system, or prepare the system for operation.

The MDVR shall be controlled using embedded processors in an industrial form factor to assure adequate shock and vibration resistance. PC motherboards are not acceptable without a documented mobile rating.

The MDVR operating system software shall be of an embedded type contained within a firmware chip. The operating system shall be written specifically for MDVR operation and allow for the largest available drives to be used. Consumer-based operating systems residing on internal hard drives are not acceptable because they are subject to frequent failure.

The MDVR shall have ten (10) NTSC video inputs for composite 1V PP signals and shall be capable of black-and-white or color recording.

The MDVR shall have a standard recording resolution of 720 × 480 pixels.

The MDVR shall provide ten (10) channels of digitized synchronous 16 bit audio with ADPCM compression at 16 KHz sampling rate. Input frequency is between 20 Hz and 8 KHz. The audio will not be turned on or recorded for any Connecticut bus.

The MDVR shall be equipped with the following external ports:
(2) RJ-45 type RS-232 Communications Ports
(1) RS-232 Serial Communications Port
(1) System Diagnostics Port
(1) RJ-45 Ethernet Port
(2) USB version 2.0 Ports

The MDVR shall have a wave engine module that accepts up to ten (10) black-and-white or color camera inputs. Every time the MDVR boots, the cameras attached to the wave engine module are detected. This allows adjustable camera configurations. The wave engine module shall also have a separate input for an audio signal.

The MDVR shall be capable of directly digitizing, combining, compressing, encrypting, and storing NTSC video, audio sensors, and auxiliary sensor signals. Video and audio signals shall be encrypted using digital cryptographic methods that prevent alteration and tampering, restrict access and detect

attempted alteration or tampering (authentication). Compressed, encrypted data is stored to mobile-rated removable disk storage media and is transmittable over a user's wired or wireless network.

In addition to accurate time and date, the MDVR shall append with image data the following eight (8) programmable analog vehicle parameters and the buses in this procurement shall be equipped and delivered recording these vehicle parameters:

- vehicle speed
- left signal (directional)
- headlights
- event switch
- door actuation
- right signal (directional)
- brake operation
- throttle position

The MDVR combines the vehicle variables above with the other text data, such as time and date and vehicle identification number.

The MDVR shall be capable of supporting up to twenty (20) J-1708 digital sensors and other devices. Proper operation of sensor input data can be reliant on the availability of appropriate interfaces and/or protocols being supplied by the vehicle owners and/or component manufacturers.

The MDVR shall have the ability to dynamically change video and audio settings during operation. Changes to the frame rate or image quality of any camera input can be changed based on time, sensor input, or J-1708 input in real time. Frame rates range from one (1) frame per day to 30 fps per camera. Audio can also be turned on or off based on these input signals and all audio shall be turned off for buses in this procurement. The MDVR shall be capable of recording multiple differing frame rates and differing levels of image quality per camera at the same time.

All data shall be recorded by the MDVR in a secure encrypted MPEG4 format that is not recognized or readable by standard digital video player software. Video recorded in standard AVI, MPEG, MOV, or MJPEG format is not acceptable. Video recorded and stored in standard AVI, MPEG, MOV, or MJPEG format is alterable by numerous off-the-shelf software packages and, as a result, provides insufficient data security to meet courtroom standards of admissibility.

The MDVR shall maintain a log file of its actions, which are stored on the removable hard drive. This information includes the time and date of the action and includes: ignition on/off, events start and stop, camera failure, drive errors, and other diagnostics.

The MDVR shall be capable of communicating utilizing the SAE "Electronic Data Interchange Between Microcomputer Systems and Heavy-Duty Vehicle Applications" standard (SAE J1708 and SAE J1587) and "Recommended Practice for a Serial Control and Communications Vehicle Network" (SAE J1939). The MDVR is optionally capable of acquiring data from electronic vehicle systems, including engines, utilizing this data communication standard. The MDVR and all sub-systems shall comply with SAE J1455, "Recommended Environmental Practices for Electrical Equipment Design" for vibration and shock isolation, including Section 202F. The electronic standard is in place and accessible to an installed vehicle ECM if output is available from a manufacturer's ECM.

The MDVR shall comply with all the requirements of the "Buy America Act" (49 CFR Part 661), at the component level.

The MDVR shall have the capability to interface with diagnostic software operated from either a workstation or portable computer for system troubleshooting and configuration purposes.

The MDVR shall interface with a remote LED panel and provide the status of MDVR start up, normal operation, not recording, events full, and camera failure. The LED shall be programmable to indicate green, red, yellow, flashing green, flashing red, or off for each status. The LED shall also have an Event switch.

The MDVR shall interface with an Event switch that will be hardwired to the vehicle's panic button. When a system input such as a panic button is activated the video recording unit shall tag the event. When retrieved, the tagged event shall be easily identifiable. The system shall be activated through the transit bus master switch. When the transit bus is started, the digital recorder shall acquire data from cameras and optional pre-selected sensor parameters. On a routine basis, recording may stop following a pre-programmed period or when the transit bus master switch is off and the system stands idle. As available disk space is filled, new information overwrites old in a linear sequence. This linear sequence shall continue indefinitely until an event or incident occurs necessitating retrieval of stored data.

The MDVR shall have at least two (2) USB 2.0 ports. These ports shall allow up to two (2) additional 120GB hard drive canisters to be attached to the MDVR for additional video storage.

The MDVR shall have an internal power source that can supply the MDVR with power in the event of an unexpected loss of power. This internal power source must supply enough power for the MDVR to perform its normal shutdown processes. This power source must be maintenance free and have an expected life of at least five (5) years.

The MDVR shall have at least two (2) PCMCIA slots. These slots shall accept a standard CF card or cellular modem card. The CF cards can be used for solid-state storage of Event data. A cellular modem can be used to transfer live video and audio data via a cellular network.

The removable disk media conforms to mobile requirements for reliability and durability and also conforms to SAE and MILSPEC vibration standards. The canister protects the media and is capable of withstanding shock pulses of 200G-forces per 2 millisecond period operating, and 800 G-forces per 1 millisecond period non-operating, without system failure.

The rated life MTBF on the disk drive shall be 40,000 hours. The average MTBF of the disk drive units shall be an average of not less than four (4) years.

The removable drive shall be secured in place by a key lock mounted on the MDVR. Total storage capacity shall be at least 500GB (gigabytes). The actual hard drive itself shall be a 2½ inch mobile-rated drive, at minimum rotating at 4200 RPM, 9.5mm height, ATA-6 interface.

Two (2) spare removable 160GB hard disk drives shall be provided to ConnDOT. The spare disk drives provided are to be identical to the system drives and shall be individually wrapped and protected within a container supplied by the selected Proposer or manufacturer.

Duration is determined by video capture quality, drive size, and aggregate frame rate. The MDVR shall support a minimum of seventy-two (72) hours with ten (10) cameras at 300 fps aggregate at standard video quality. For this procurement seven (7) cameras will be provided with an initial setting each of 15 fps.

Disk capacity/storage time shall be field-upgradeable with nominal changes to software and/or hardware.

The disk media shall be capable of withstanding continuous vibration (5Hz to 500Hz) and frequent shock pulses of moderate duration (up to 10ms). Recorded data must survive all typical traffic accidents as well as collisions up to 40G-forces.

Disk storage media shall be conveniently portable, easily removable and transportable.

All recorded data shall be created in a secure encrypted file format using digital cryptography. The encryption restricts access, prevents alteration and tampering, and supports the detection or attempts to alter or tamper with video images or sensor information.

Recorded data shall be viewable in read-only format on a standard PC workstation or PC laptop. Software is supplied for on-site data playback and is compatible with standard PC-based operating systems such as Microsoft Windows XP or Vista. Data can be easily downloaded for long-term storage to high capacity storage media (e.g., CD-ROM, DVD-ROM, Jaz or Zip-type cartridges, or DAT cassettes.

The MDVR shall support wireless connectivity. Data from the hard drive canister shall be transferable via a compatible 802.11x wireless Ethernet bridge or cellular modem and downloadable to a server via a wireless network. The transferred or downloaded data shall be reviewable by a workstation that has an installed copy of Safety Vision's video reviewing software. The system shall also be capable of delivering video data and system health status information automatically to the server for review.

A desktop viewing station shall be provided to ConnDOT and consist of a personal computer (tower configuration) dedicated to playback and review of the MDVR's recorded data. (Dell XPS One Desktop or equal required). Minimum system requirements for the desktop viewing station are as follows:

- Microsoft Windows XP Professional or Vista Operating System
- Intel G33 Express processor
- Built-in 20 inch monitor with 32-bit color and a minimum resolution of 1680x1050 pixels
- 2GB Dual Channel DDR2 SDRAM at 667MHz - 2 DIMMs
- 250GB Serial ATA 3GB/s Hard Drive (7200RPM) w/DataBurst Cache™
- ATI Mobility Radeon HD 2400 Video Card
- Integrated Gigabit Ethernet (10/100/1000Base-T)
- 8X Slot load CD/DVD burner (DVD+/-RW)
- NIC
- 6 USB 2.0 ports
- Standard keyboard and mouse
- Audio with built-in speakers
- Storage devices to meet the user's requirements for archiving, including automated upload to a secure Internet server
- Removable drive adapter (Safety Vision USB QuickView™ or equivalent) that connects the MDVR's removable drive to the desktop computer via a USB 2.0 connection

A notebook computer shall be provided to ConnDOT to act as a portable viewing station that will be dedicated to playback and review of the MDVR's recorded data. Minimum system requirements for the portable viewing station are as follows:

- Microsoft Windows XP Professional or Vista Operating System
- Intel Core 2 Duo Processor T7500 (2.2GHz/800Mhz FSB, 4MB Cache)
- 15.3 inch LCD color monitor with a minimum resolution of 1,280 x 800 pixels
- 3GB Shared Dual Channel DDR2 SDRAM at 667MHz (2 Dimms)
- 250 GB 5400rpm SATA Hard Drive
- 128MB NVIDIA GeForce 8400 GS video
- Integrated sound card and built-in speakers
- Slot Load DVD+/-RW (DVD/CD read/write)
- NIC & wireless card
- Serial port
- USB 2.0 port
- 56 WHr 6-cell Lithium Ion Primary Battery
- Storage devices to meet the user's requirements for archiving, including automated upload to a secure Internet server
- Removable drive adapter (Safety Vision USB QuickView™ or equivalent) that connects the MDVR removable drive to the notebook via a USB 2.0 connection

The system's viewing software (SafetyView 6000 Pro or equal) shall allow review of the data from the MDVR's removable drive canister. It shall allow for up to ten (10) simultaneous, synchronized playback windows as thumbnails, with one (1), two (2), four (4), eight (8), or ten (10) larger windows displayed at one time in a tiled format.

It shall allow for a zoom function by means of a slide bar, double-clicking, or rubber banding. The screen shall display the Vehicle ID number, date of recorded video, display sensor information, and camera number. This option shall be capable of being turned on or off.

It shall allow for image enhancement consisting of sharpening, brightness, contrast, saturation, and hue. The MDVR shall allow all image enhancements to be applied to the motion video, but shall *not* modify the original video in any manner (i.e., enhancements to a video frame continue to play on subsequent frames, but are not saved to the removable drive canister).

The MDVR shall allow for archiving of all video, selected frames, or selected loops of video.
The MDVR shall allow for individual video frames or selected loops to be exported in JPEG, BMP, AVI or TIFF formats. The MDVR shall allow for ten (10) synchronized channels of audio playback with multiple filter options.

The MDVR shall allow searching for specific video via time and date stamps. The MDVR shall allow the user to select the time and date for viewing. It is not necessary to load the entire hard drive to view a set time. Specific Events and Incidents shall also be selectable.

Each video frame shall be decoded and authenticated dynamically upon request. The MDVR shall display the status as each frame is validated.

The MDVR shall allow users to create custom reports.

The MDVR data must be able to be accepted as evidence in criminal proceedings and civil proceedings, and be deemed to have sufficient forensic integrity to meet authentication and encryption requirements expected by the courts.

All video systems shall be delivered with the manufacturer's standard manuals for each component for the model offered.

The vendor shall provide each transit system in this procurement with any special diagnostic equipment necessary to maintain this video system.

Training shall be provided to insure satisfactory operation, servicing and maintenance of the equipment furnished. Instructions shall also include manufacturers' recommendations of test frequency, limits and methods, including downloading and transferring to a CD or DVD. When methods of access, removal, dismantling or application of a component are not self-evident, the instruction shall also cover these matters.

Training shall be provided to transit property personnel in maintenance, engineering, dispatch, and supervisory staff. Training includes maintenance procedures, installation and un-installation procedures, disk retrieval, and playback and data transfer.

Digital video camera systems shall include all necessary equipment for total system functionality: cameras, digital video recorders, multiplexers, converters, hard drives, cabling, operating software, all connectors and mounting enclosures.

The system shall have a minimum of twelve (12) months of actual documented field use in an urban mass transit bus environment.

The system shall be field-upgradeable both in hardware and software with minimal time loss and expense.

The total system shall have a one (1) year parts and labor warranty. Repair and/or replacement shall be provided at no charge, during the warranty period, for parts with manufacturing defects.

Telephone troubleshooting service shall be available between 8:00 am and 5:00 pm Connecticut time, Monday through Friday via a toll free telephone line.

BICYCLE RACK

A two (2) position SportWorks stainless steel or equivalent bicycle rack shall be provided and installed on the front of the bus using a quick release removal bracket. The standard safety and operating instruction decals are required on each bicycle rack.

RADIO

The radio system includes an operator speaker, handset and cradle (Audiosears Corp model 1001A00AEMJLUC-QHC or equal) to be provided and installed by the vendor. The radio will be provided by and installed by ConnDOT after the buses are delivered. A location convenient to the operator shall be provided for the radio control head, speaker, handset, and cradle. The location shall conform to SAE Recommended Practice J287 "Driver Hand Control Reach."

Provisions for attaching an antenna to the roof and routing an antenna lead to the radio compartment shall be provided. Antenna mounting shall conform to the electromagnetic suppression requirements of SAE J551. A roof mounted radio antenna requires a ground plane to prevent electronic noise being generated inside the vehicle. A metal roof can serve as a sufficient ground plane, however a fiberglass roof requires either a metallic surface, or an antenna with a virtual ground plane. To test and repair antenna connections, quick access shall be provided inside the vehicle at the point where the antenna is mounted to the roof and where the antenna cable attaches to the antenna.

A radio box is required that will be pre-wired by the bus manufacturer with power on ignition run switch and 12v and 24v power. The box shall be keyed with a 5/16 inch T.

A Line Backer UHF Omni-directional broadband transit antenna shall be provided by the vendor and installed on the bus roof at a location to be approved by ConnDOT at preproduction.

EMERGENCY ALARM

The Covert Emergency Alarm is for the operators use in dangerous situations. The alarm will be integrated with the radio and the External Route Display will signal 911 and the CCTV will tag and save recordings. The alarm button shall be located on the Bus Operator Work Station lower left side wall. The driver should be able to take his/her left hand and reach over in a location near his/her knee to push it without moving or calling attention to his/her action. The alarm button shall be a Square D #9001KR2U push button or equal.

An antenna cable shall be provided by the vendor and installed as follows:
Run 2 Belden 8418 (20 AWG 8 Conductor shielded) audio cables from the top of the "Streetside Closeout air/electrical" to Radio Box leaving 24 inches extra in Radio Box. Mark "Handset/Speaker/Spectra Mic" and "Handset/Speaker/Spectra Mic Spare." Run RG58/U Belden 8240 Coax from Antenna Access hole to radio box leaving 24 inches extra in radio box and 12 inches extra in antenna access. Run 1-20 AWG Green and 1-20 AWG Black from Terminal block in Radio Box leaving 36 inches coiled in the bottom of the box for 911 system, Marked for "Silent Alarm Code Plug".

Selection Criteria

A Selection Committee will review and score all proposals. The following information, in addition to the requirements, terms and conditions identified throughout this RFP Document, will be considered as part of the selection process and is listed in order of relative importance.

Proposers will address each of the selection criteria below as part of RFP submission to enable comparison. See Section "Submittal Requirements" below for detailed requirements.

1. **PRODUCT DESIGN AND PERFORMANCE**
   - **1a.** Conformance with Technical Specifications
   - **1b.** Vehicle construction and system design
     1) Overall quality of vehicle design
     2) Vehicle esthetic design
     3) Vehicle weight and fuel economy
   - **1c.** Documented reliability of proposed vehicle
     1) Preventative maintenance schedule for proposed vehicle
     2) Vehicle corrosion protection
     3) History of performance of proposed vehicle
   - **1d.** Other design and performance elements of the components which comprise those systems
   - **1e.** Test results, safety and maintenance factors and cost of operation for the bus design and system components proposed.
   - **1f.** Completeness, clarity and format of maintenance, parts, training and operating manuals, price lists and drawings

2. **PRICE PER BUS**

3. **DELIVERY SCHEDULE**
   - **3a.** Minimum first year purchase
   - **3b.** Remaining first year commitment
   - **3c.** Option commitment

4. **QUALIFICATIONS, PERFORMANCE AND FINANCIAL RESPONSIBILITY**
   - **4a.** Financial Capabilities
     1) Financial resources and stability
     2) Financial statements
     3) Ability to secure required bonds
     4) Demonstrated ability to fiscally manage and monitor contracts
     5) Willingness of any parent company to provide the required financial guaranty
     6) Ability to obtain required insurance with coverage values that meet minimum requirements
   - **4b.** Organizational Capabilities
     1) Proposed organizational and operational structure for this project
     2) Technological resources
     3) Established personnel practices and employee relations
     4) Experience and qualifications of key personnel
     5) Evidence that the human and physical resources are sufficient to perform the contract as specified and assure delivery of all equipment within the time specified in the Contract
     6) Adequate manufacturing facilities sufficient to produce and factory-test equipment on schedule

7) A spare parts procurement and distribution system sufficient to support equipment maintenance without delays and a service organization with skills, experience, and equipment sufficient to perform all warranty and on-site work

4c. Previous Contract History

1) Defaults or cancellations on previous contracts
2) History of contracts covering past sales by vehicle model
3) The Proposer's experience and performance on similar industry contracts
4) The Proposer's demonstrated commitment and capability to satisfy warranty, repair and parts supply requirements on other contracts
5) The amount of effort required by other transit properties to secure satisfactory performance from the Proposer
6) References

5) FLEET STANDARDIZATION

5a. Standardization of the bus fleet for training, tools and vehicle parts inventory.

1) Proposed buses that are the same make and model in multiple sizes listed

5b. Buses available with a hybrid drive option

Submittal Requirements

The Contractor shall furnish written evidence satisfactory to the State that they fully understand the purpose for which the equipment is intended and that they are qualified and capable of fulfilling all provisions of this contract. Please provide a written response to each item noted below for each bus type as part of RFP submission (one (1) original and six (6) copies) to enable comparison by the Selection Committee. Please number and letter your responses to correspond with each item listed below for identification purposes. Failure to provide the required information in full will be reflected in the scoring of your proposal.

1. **PRODUCT DESIGN AND PERFORMANCE**

The information provided by the Proposer in its technical submittal relating to buses to be provided will be utilized to evaluate the proposal in relation to this factor.

1a. Conformance with Technical Specifications

1) Proposer shall fully and accurately complete and submit the "Vehicle Technical Information" questionnaire for each type of vehicle proposed

1b. Vehicle construction and system design

1) **Overall quality of vehicle design**

Proposer shall submit: Reports, reference materials, specification sheets, brochures, diagrams, special features lists, charts, tables, figures, statistics, promotional materials, pamphlets, photographs, The Penn State Bus Testing and Research Center STURAA 12 year and 500,000 mile test for this bus model. [The Surface Transportation and Uniform Relocation Assistance Act of 1987, Section 317: Bus Testing, amends Section 12 (General Provisions) of the FTA Act of 1964]. Other tests and reports done on this bus model done by Environmental Canada, Southwest Research, TRB, TCRB, FTA, State or City transit agencies and any other information deemed relevant.

2) **Vehicle esthetic design**

Proposer shall submit: Reports, reference materials, specification sheets, brochures, diagrams, special features list, charts, tables, figures, statistics, promotional materials, photographs and any other information deemed relevant.

3) **Vehicle weight and fuel economy**

Proposer shall submit: Reports, reference materials, specification sheets, brochures, diagrams, special features lists, charts, tables, figures, statistics, promotional materials, pamphlets, photographs, The Penn State Bus Testing and Research Center STURAA 12 year and 500,000 mile test for this bus model. [The Surface Transportation and Uniform Relocation Assistance Act of 1987, Section 317: Bus Testing, amends Section 12 (General Provisions) of the FTA Act of 1964]. Other tests and reports done on this bus model done by Environmental Canada, Southwest Research, TRB, TCRB, FTA, State or City transit agencies and any other information deemed relevant.

1c. Documented reliability of proposed vehicle

1) **Preventative maintenance schedule for proposed vehicle**

Proposer shall submit: Reports, reference materials, specification sheets, brochures, diagrams, special features lists, charts, tables, figures, statistics, promotional materials, pamphlets, photographs, The Penn State Bus Testing and Research Center STURAA 12 year and 500,000 mile test for this bus model. [The Surface Transportation and Uniform Relocation Assistance Act of 1987, Section 317: Bus Testing, amends Section 12 (General Provisions) of the FTA Act of 1964]. Other tests and reports done on this bus model done by Environmental Canada, Southwest Research, TRB, TCRB, FTA, State or City transit agencies and any other information deemed relevant.

2) **Vehicle corrosion protection**

Proposer shall submit: Reports, reference materials, specification sheets, brochures, diagrams, special features lists, charts, tables, figures, statistics, promotional materials, pamphlets, photographs, The Penn State Bus Testing and Research Center STURAA 12 year and 500,000 mile test for this bus model. [The Surface Transportation and Uniform Relocation Assistance Act of 1987, Section 317: Bus Testing, amends Section 12 (General Provisions) of the FTA Act of 1964]. Other tests and reports done on this bus model done by Environmental Canada, Southwest Research, TRB, TCRB, FTA, State or City transit agencies and any other information deemed relevant.

3) **History of performance of proposed vehicle**
Proposer shall submit: Reports, reference materials, specification sheets, brochures, diagrams, special features lists, charts, tables, figures, statistics, promotional materials, pamphlets, photographs, The Penn State Bus Testing and Research Center STURAA 12 year and 500,000 mile test for this bus model. [The Surface Transportation and Uniform Relocation Assistance Act of 1987, Section 317: Bus Testing, amends Section 12 (General Provisions) of the FTA Act of 1964]. Other tests and reports done on this bus model done by Environmental Canada, Southwest Research, TRB, TCRB, FTA, State or City transit agencies and any other information deemed relevant.

1d. **Other design and performance elements of the components which comprise those systems**
Proposer shall submit: Reports, reference materials, specification sheets, brochures, diagrams, special features lists, charts, tables, figures, statistics, promotional materials, pamphlets, photographs, The Penn State Bus Testing and Research Center STURAA 12 year and 500,000 mile test for this bus model. [The Surface Transportation and Uniform Relocation Assistance Act of 1987, Section 317: Bus Testing, amends Section 12 (General Provisions) of the FTA Act of 1964]. Other tests and reports done on this bus model done by Environmental Canada, Southwest Research, TRB, TCRB, FTA, State or City transit agencies and any other information deemed relevant.

1e. **Test results, safety and maintenance factors and cost of operation for the bus design and system components proposed**
Proposer shall submit: Reports, reference materials, specification sheets, brochures, diagrams, special features lists, charts, tables, figures, statistics, promotional materials, pamphlets, photographs, The Penn State Bus Testing and Research Center STURAA 12 year and 500,000 mile test for a for this bus model. [The Surface Transportation and Uniform Relocation Assistance Act of 1987, Section 317: Bus Testing, amends Section 12 (General Provisions) of the FTA Act of 1964]. Other tests and reports done on this bus model done by Environmental Canada, Southwest Research, TRB, TCRB, FTA, State or City transit agencies and any other information deemed relevant.

1f. **Completeness, clarity and format of maintenance, parts, training and operating manuals, price lists and drawings**
Proposer shall submit: Reports, reference materials, specification sheets, brochures, diagrams, special features lists, charts, tables, figures, statistics, promotional materials, pamphlets, photographs. Other tests and reports done on this bus model done by Environmental Canada, Southwest Research, TRB, TCRB, FTA, State or City transit agencies and any other information deemed relevant.

2. **PRICE PER BUS**
The evaluation panel will consider the reliability of the buses to be provided, warranties, parts compatibility and required inventory expenses and other factors affecting the overall cost in determining its assessment of points to be awarded.

2a. **Exhibit B (Form RFP-16 - Price Schedule)**

3. **DELIVERY SCHEDULE**
The earliest or shortest delivery schedule from issuance of purchase order with evidence that it can be accomplished shall receive higher points.

3a. **Minimum first year purchase**
Proposer shall submit a delivery schedule and plan to adhere to the schedule.

3b. **Remaining first year commitment**
Proposer shall submit a delivery schedule and plan to adhere to the schedule.

3c. **Option commitment**
Proposer shall submit a delivery schedule and plan to adhere to the schedule.

4. **QUALIFICATIONS, PERFORMANCE AND FINANCIAL RESPONSIBILITY**
This factor will look at the capability and reputation of the bus manufacturer as presented in the Proposal or as is determined by review of information available from references or other resources. The evaluation will look at the manufacturer's overall organizational and financial capabilities and consider key components such as organizational reporting structure, quality control, quality assurance, research and development, technical,

training and parts support, response time, product capabilities, bonding capacity, and financial history, as well as other considerations in reaching a final point determination.

4a. Financial Capabilities

1) **Financial resources and stability**

2) **Financial Statements for the past two (2) years (Should Proposers wish this information to be considered confidential, the information should be placed in a sealed envelope marked "Confidential". This information will not be made viewable to the public and will only be reviewed by the Selection Committee.)**
Proposer shall submit financial statements prepared in accordance with United States GAAP and audited by an independent certified public accountant

3) **Ability to secure required bonds**
Proposer shall demonstrate the ability to secure required bond(s) as evidenced by submitting a letter of commitment from an underwriter confirming that the Proposer can be bonded for the required amount

4) **Demonstrated ability to fiscally manage and monitor contracts**
Proposer shall submit references as to their fiscal management and monitoring of existing contracts of similar systems.

5) **Willingness of any parent company to provide the required financial guaranty**
Proposer shall submit a letter from a letter of commitment signed by an officer of the parent company

6) **Ability to obtain required insurance with coverage values that meet minimum requirements**
Proposer shall submit a letter from an underwriter confirming that the Proposer can be insured for the required amount

4b. Organizational Capabilities

1) **Proposed organizational and operational structure for this project**
Proposer shall submit a formal organization and operational structure of planned project staffing.

2) **Technological resources**
Proposer shall submit a description of the technical resources that the proposer can bring to the project as part of the ongoing project as well as describe the additional availability of technological resources should the need for additional services be detected (crisis mode).

3) **Established personnel practices and employee relations**
Proposer shall submit a description of each of the following: Turnover ratio, Affirmative Action policies and practices, full time/part time ratio, hiring practices, training procedures, and pre-screening

4) **Experience and qualifications of key personnel**
Proposers should submit resumes for all key personnel to be utilized on the project

5) **Evidence that the human and physical resources are sufficient to perform the contract as specified and assure delivery of all equipment within the time specified in the Contract**
Proposer shall submit a description of each of the following: Engineering, management and service organizations with sufficient personnel and requisite disciplines, licenses, skills, experience, and equipment to complete the Contract as required and satisfy any engineering or service problems that may arise during the warranty period

6) **Adequate manufacturing facilities sufficient to produce and factory-test equipment on schedule**
Proposers should submit a description of the Proposer's facilities.

7) **A spare parts procurement and distribution system sufficient to support equipment maintenance without delays and a service organization with skills, experience, and equipment sufficient to perform all warranty and on-site work**

4c. Previous Contract History

1) **Defaults or cancellations on previous contracts**
   Proposers shall submit a list of any defaults or cancellations on previous contracts as well as description of issue

2) **History of contracts covering past sales by vehicle model**
   Proposers shall provide a past sales list by vehicle type including customer contact information

3) **The Proposer's experience and performance on similar industry contracts**
   Proposers shall provide a list of work completed for location of similar size and make-up

4) **The Proposer's demonstrated commitment and capability to satisfy warranty, repair and parts supply requirements on other contracts**
   Proposer shall provide examples of the above information from existing or prior contracts

5) **The amount of effort required by other transit properties to secure satisfactory performance from the Proposer**
   Proposer shall provide customer references as required to satisfy this requirement

6) **References**
   Proposers shall submit references from entities that have contracted with the Proposer, including but not limited to, evidence of satisfactory performance and integrity on contracts, making timely deliveries, meeting specifications and warranty provisions, parts availability, and steps Proposer took to resolve any judgments, liens, fleet defects history, and warranty claims

5) <u>FLEET STANDARDIZATION</u>
A higher weight will be awarded to buses proposed as the same make and model in multiple sizes requested and available with a hybrid drive option.

5a. Standardization of the bus fleet for training, tools and vehicle parts inventory.

1) **Proposed buses that are the same make and model in multiple sizes listed.**
   Proposers shall submit a complete description of vehicles to be provided including make, model, size and drive option.

5b. Buses available with a hybrid drive option
Proposers shall submit a complete description of vehicles to be provided including make, model, size and drive option

CONTRACT

This RFP is not a contract and, alone, shall not be interpreted as such. Rather, this RFP only serves as the instrument through which proposals are solicited. The State will pursue negotiations with the highest scoring proposal. If, for some reason, ConnDOT and the initial Proposer fail to reach consensus on the issues relative to a contract, then ConnDOT may commence contract negotiations with other Proposers. ConnDOT may decide at any time to start the RFP process again.

Thereafter, the awarded Contractor and ConnDOT will be required to sign a formal contract. (See attached template)

REQUEST FOR PROPOSAL
DOT-26A

STATE OF CONNECTICUT

DEPARTMENT OF TRANSPORTATION

PURCHASING & MATERIALS MANAGEMENT
2800 Berlin Turnpike, Room 2418
PO BOX 317546
NEWINGTON, CT 06131-7546

USDOT TIGER

THIS FORM AND REQUIRED PROPOSAL SCHEDULE FORMS MUST BE RETURNED

Fiscal Administrative Supervisor
Mary Matuszak

Telephone Number
860-594-2342

Read Carefully

RFP NO:	RFP DUE DATE:	RFP OPENING TIME:	BID SURETY:	DATE ISSUED:
09DOT7004	**June 15, 2009**	**2:00 pm (Eastern Time)**	**N/A**	**March 26, 2009**

COMMODITY CLASS/SUBCLASS AND DESCRIPTION:

FOR: **PURCHASE OF LOW FLOOR HEAVY DUTY TRANSIT BUSES AND HIGH FLOOR HEAVY DUTY SUBURBAN BUSES**

TERM OF CONTRACT / DELIVERY DATE REQ'D:
Delivery Schedule Detailed in Bid Terms and Conditions

ADDENDUM DATE: June 4, 2009

ADDENDUM #4

Reminder: RFP DUE DATE HAS BEEN EXTENDED UNTIL MONDAY, JUNE 15, 2009, AT 2:00 PM (EASTERN TIME)

1. The following question was received regarding submittal requirements. A response is provided to clarify requirements.

   Q: On Page #18 of Addendum #1, your response to our question on technical proposals was "we confirm that a technical proposal is required for each model offered".

   Does this mean that if we submit a proposal for 40' buses we can submit a single proposal for that length of bus which covers both diesel and optional diesel-hybrid propulsion types.

   A: *All changes/differences between a diesel model bus and a diesel-hybrid propulsion bus must be completely and clearly identified and articulated by the manufacturer. A separate vehicle technical information set is required to assure that all information is communicated.*

2. An additional question was received regarding the correct mailing address for the RFP. Please use the following as a guide for mailing instructions:

   If the proposal is sent via **A COMMERCIAL EXPRESS CARRIER**, please address proposal as follows:
   Connecticut Department of Transportation
   Attn: Mary Matuszak
   2800 Berlin Turnpike
   Newington, CT 06111

   If the proposal is sent via **U. S. MAIL**, please address proposal as follows:
   Connecticut Department of Transportation
   Attn: Mary Matuszak
   P.O. Box 317546
   Newington, CT 06131-7546

   If the proposal is being **HAND CARRIED**, please deliver to:
   Connecticut Department of Transportation
   2800 Berlin Turnpike
   Newington, CT
   Room 2418+

BID PROPOSAL
SP-26 Rev. 11/97

Contract Specialist
Mary Matuszak

Telephone Number
860-594-2342

STATE OF CONNECTICUT

DEPARTMENT OF TRANSPORTATION
PURCHASING & MATERIALS MANAGEMENT
2800 Berlin Turnpike, Room 2418
PO BOX 317546
NEWINGTON, CT 06131-5746

RFP NO.
09DOT7004

Read Carefully

Proposers are cautioned to sign and return all Addenda with their RFP.

All other Terms and Conditions remain the same.

NOTE: Sign below to acknowledge receipt of Addendum #4 and return with RFP. Failure to do so may result in rejection of RFP.

Print Name	Signature	Date

REQUEST FOR PROPOSAL
DOT-26A

STATE OF CONNECTICUT

DEPARTMENT OF TRANSPORTATION

PURCHASING & MATERIALS MANAGEMENT
2800 Berlin Turnpike, Room 2418
PO BOX 317546
NEWINGTON, CT 06131-7546

THIS FORM AND REQUIRED PROPOSAL SCHEDULE FORMS MUST BE RETURNED

USDOT TIGER

Fiscal Administrative Supervisor
Mary Matuszak

Telephone Number
860-594-2342

Read Carefully

RFP NO:	RFP DUE DATE:	RFP OPENING TIME:	BID SURETY:	DATE ISSUED:
09DOT7004	**June 15, 2009**	**2:00 pm (Eastern Time)**	**N/A**	**March 26, 2009**

COMMODITY CLASS/SUBCLASS AND DESCRIPTION:

FOR: **PURCHASE OF LOW FLOOR HEAVY DUTY TRANSIT BUSES AND HIGH FLOOR HEAVY DUTY SUBURBAN BUSES**

TERM OF CONTRACT / DELIVERY DATE REQ'D:
Delivery Schedule Detailed in Bid Terms and Conditions

ADDENDUM DATE: May 20, 2009

ADDENDUM #3

1. **THE RFP DUE DATE HAS BEEN EXTENDED UNTIL MONDAY, JUNE 15, 2009, AT 2:00 PM (EASTERN TIME) TO ALLOW PROPOSERS ADDITIONAL TIME TO SUBMIT COMPLETE RFP PACKAGES.**

2. The following questions were received regarding submittal requirements. Responses are provided to clarify requirements.

   Q: Does the Consulting Agreement Affidavit need to be signed by the CEO or can it be signed by a Vice President of the Company?

   A: *The Vice President can sign it as long as we have a delegation of authority.*

   Q: Regarding the Nondiscrimination Certification, if a Connecticut-specific Board resolution is required by this form, does the form need to be completed and submitted, or can the form be completed any time up to the date of the award? Obviously, this requires a Board meeting and those are rigidly scheduled.

   A: *We can accept the bid without the Nondiscrimination Certification, but would require it to make an award. If there are no board meetings scheduled, you would need to get a waiver from CHRO.*

   Q: Is it correct that the Individual Nondiscrimination Certification can be ignored (i.e. not signed and returned) when a corporation is involved?
   A: *Yes*

   Q: On the price schedule (exhibit B) there are line items for certain spares, including a diesel bus transmission. Is Conn DOT interested in pricing for a spare hybrid drive unit/assembly? This would require an additional line item entry.

   Same question (more or less) for the transmission extended warranty. Does Conn DOT want a quote for an extended warranty on any hybrid drive system proposed? This would also require an additional line item entry. In fact, there may also be another line item required for the hybrid engine warranty, depending on whether a Cummins ISB or ISL is selected.

   A: *The Department expects to receive a separate proposal for each size and type of equipment. We do not request an extended warranty for any hybrid drive system components. However we are interested in receiving pricing for spare hybrid drive unit/assembly (s) and request that line 2 on page 2 of Exhibit B "Diesel Bus Transmission" be modified and used to detail the spare hybrid drive unit/assembly information for hybrid vehicles.*

STATE OF CONNECTICUT

DEPARTMENT OF TRANSPORTATION
PURCHASING & MATERIALS MANAGEMENT
2800 Berlin Turnpike, Room 2418
PO BOX 317546
NEWINGTON, CT 06131-5746

RFP NO.
09DOT7004

Read Carefully

Contract Specialist
Mary Matuszak

Telephone Number
860-594-2342

Q: We are preparing a finance proposal to be submitted along with the bus prices. We would like to submit this proposal in a manner that makes the most sense. Based on reading the overview, it is stated in the third paragraph on page 11 that "other transit agencies will piggyback on this procurement". It is noted that the bus needs of Bridgeport, Norwalk, Middletown and Housatonic have been rolled into the bus totals. For our purposes we would like to provide numbers that make the most sense. We could provide individual proposals for the needs of the individual agencies cited, besides providing an all encompassing one. Would it be possible to break out the number/type of buses that are being requested by the four authorities in question?

A: *A break out of the exact number/type of buses that are being requested by the four authorities in question is unavailable.*

Proposers are cautioned to sign and return all Addenda with their RFP.

All other Terms and Conditions remain the same.

NOTE: Sign below to acknowledge receipt of Addendum #3 and return with RFP. Failure to do so may result in rejection of RFP.

Print Name _____ **Signature** _____ **Date** _____

REQUEST FOR PROPOSAL
DOT-26A

STATE OF CONNECTICUT

DEPARTMENT OF TRANSPORTATION

PURCHASING & MATERIALS MANAGEMENT
2800 Berlin Turnpike, Room 1419
PO BOX 317546
NEWINGTON, CT 06131-7546

THIS FORM AND REQUIRED PROPOSAL SCHEDULE FORMS MUST BE RETURNED

USDOT TIGER

Fiscal Administrative Supervisor
Mary Matuszak

Telephone Number
860-594-2342

Read Carefully

RFP NO:	RFP DUE DATE:	RFP OPENING TIME:	BID SURETY:	DATE ISSUED:
09DOT7004	**May 28, 2009**	**2:00 pm (Eastern Time)**	**N/A**	**May 26, 2009**

COMMODITY CLASS/SUBCLASS AND DESCRIPTION:

FOR: **PURCHASE OF LOW FLOOR HEAVY DUTY TRANSIT BUSES AND HIGH FLOOR HEAVY DUTY SUBURBAN BUSES**

TERM OF CONTRACT / DELIVERY DATE REQ'D:
Delivery Schedule Detailed in Bid Terms and Conditions

ADDENDUM DATE: May 8, 2009

ADDENDUM #2

1. The following language is hereby added to **EXHIBIT A**, Product and/or Service Specifications, "Special Provisions"

American Recovery and Reinvestment Act of 2009:

1. (a) The grantee agrees to utilize the Connecticut Jobs Funnels as the First Source Referral Program. As the First Source Referral program, the Connecticut Jobs Funnels will serve as a source for recruitment of qualified workers for State of Connecticut contractors and subcontractors.

   (b) The grantee agrees to notify the Jobs Funnels of available jobs related to this contract or subcontract.

2. The grantee agrees to accurately record and report information regarding jobs or positions created or retained in the United States and outlying areas as a result of funding provided through the American Recovery and Reinvestment Act of 2009, including, but not limited to the description of any such job; the number of persons employed in any such job; the number of hours worked by such persons; the hourly wage or salary paid to such persons. Federal guidance requires (i) a brief description of the types of jobs created and jobs retained in the United States and outlying areas. "Jobs or positions created" means those new positions created and filled, or previously existing unfilled positions that are filled, as a result of Recovery Act funding. "Jobs or positions retained" means those previously existing filled positions that are retained as a result of Recovery Act funding. (ii) "jobs created and jobs retained in the United States and outlying areas" shall include any new positions created and any existing filled positions that were retained to support or carry out Recovery Act projects or activities managed directly by the recipient, and if known, by subrecipients. The number shall be expressed as "full-time equivalent" (FTE), calculated cumulatively as all hours worked divided by the total number of hours in a full-time schedule, as defined by the recipient. For instance, two full-time employees and one part-time employee working half days would be reported as 2.5 FTE in each calendar quarter. (iii) A job cannot be reported as both created and retained. As used in this instruction, United States means the 50 States and the District of Columbia, and outlying areas means: (1) Commonwealths. (i) Puerto Rico. (ii) The Northern Mariana Islands; (2) Territories. (i) American Samoa. (ii) Guam. (iii) U.S. Virgin Islands; and (3) Minor outlying islands. (i) Baker Island. (ii) Howland Island. (iii) Jarvis Island. (iv) Johnston Atoll. (v) Kingman Reef. (vi) Midway Islands. (vii) Navassa Island. (viii) Palmyra Atoll. (ix) Wake Atoll.

Proposers are cautioned to sign and return all Addenda with their RFP.

All other Terms and Conditions remain the same.

NOTE: Sign below to acknowledge receipt of Addendum #2 and return with RFP. Failure to do so may result in rejection of RFP.

Print Name _____ **Signature** _____ **Date** _____

REQUEST FOR PROPOSAL
DOT-26A

STATE OF CONNECTICUT

DEPARTMENT OF TRANSPORTATION

PURCHASING & MATERIALS MANAGEMENT
2800 Berlin Turnpike, Room 1419
PO BOX 317546
NEWINGTON, CT 06131-7546
Page 1 OF 2

THIS FORM AND REQUIRED PROPOSAL SCHEDULE FORMS MUST BE RETURNED

Fiscal Administrative Supervisor
Mary Matuszak

Telephone Number
860-594-2342

Read Carefully

RFP NO:	RFP DUE DATE:	RFP OPENING TIME:	BID SURETY:	DATE ISSUED:
09DOT7004	May 28, 2009	2:00 pm (Eastern Time)	N/A	March 26, 2009

COMMODITY CLASS/SUBCLASS AND DESCRIPTION:

FOR: **PURCHASE OF LOW FLOOR HEAVY DUTY TRANSIT BUSES AND HIGH FLOOR HEAVY DUTY SUBURBAN BUSES**

TERM OF CONTRACT / DELIVERY DATE REQ'D:
Delivery Schedule Detailed in Bid Terms and Conditions

ADDENDUM DATE: May 1, 2009

ADDENDUM #1

1. **Questions received and corresponding responses are attached.**

Proposers are cautioned to sign and return all Addenda with their RFP.

All other Terms and Conditions remain the same.

NOTE: Sign below to acknowledge receipt of Addendum #1 and return with RFP. Failure to do so may result in rejection of RFP.

Print Name	Signature	Date

Questions received and their corresponding answers are as follows:

Q: What do the terms "like" and "unlike" on the equipment needs table refer to?
A: The terms "Like Replacement" and "Unlike Replacement" are for the internal capital planning use of ConnDOT. The terms signify that the equipment scheduled for replacement will be replaced with similar equipment or equipment of another size.

Q: Would DOT and the participating agencies consider a 45 ft. low floor bus for this procurement?
A: NO

Section	Page	Q:
Contract 1. (h)	1	Request that line three of this Section be changed to read: "...including, but not limited to, labor troubles whether related or unrelated to the Contractor...".

A: The Contract terms have been approved by the State of Connecticut, Attorney General's Office. As this is an RFP, terms and conditions may or may not be modified with the selected Contractor(s) during the negotiation phase.

Section	Page	Q:
Contract 4. (b)	3	Request that all payment terms be changed to read "will be due 30 days after acceptance." This is the accepted industry standard.

A: The Contract terms have been approved by the State of Connecticut, Attorney General's Office. As this is an RFP, terms and conditions may or may not be modified with the selected Contractor(s) during the negotiation phase.

Section	Page	Q:
Contract 7.	4	Request that line three of this Section be changed to read "...alteration of the Contract shall be valid or binding upon either party...".

A: The Contract terms have been approved by the State of Connecticut, Attorney General's Office. As this is an RFP, terms and conditions may or may not be modified with the selected Contractor(s) during the negotiation phase.

Section	Page	Q:
Contract 9. (e)	5	Request clarification that should the contract be terminated the Contractor will be reimbursed its costs and profit on work performed up to the time of termination, per the standard Bus procurement Guidelines, Section 2.2.6.1.

A: The Contract terms have been approved by the State of Connecticut, Attorney General's Office. As this is an RFP, terms and conditions may or may not be modified with the selected Contractor(s) during the negotiation phase.

Section	Page	Q:
Contract 9. (e)	5	Request clarification that the Contractor will be reimbursed for any material ordered in pursuit of the work that cannot be returned to any vendor or passed on to any replacement contractor in the event of termination.

A: The Contract terms have been approved by the State of Connecticut, Attorney General's Office. As this is an RFP, terms and conditions may or may not be modified with the selected Contractor(s) during the negotiation phase.

Section	Page	Q:
Contract 10.	6	Request that the first line in this Section be changed to read "...The parties may agree to a reduction or an increase in the Contract...".

A: The Contract terms have been approved by the State of Connecticut, Attorney General's Office. As this is an RFP, terms and conditions may or may not be modified with the selected Contractor(s) during the negotiation phase.

Section	Page	Q:
Contract 11.	6	Request that the last sentence of this Section be deleted in its entirety. Withholding of payment for a belief is not quantifiable.

A: The Contract terms have been approved by the State of Connecticut, Attorney General's Office. As this is an RFP, terms and conditions may or may not be modified with the selected Contractor(s) during the negotiation phase.3

Section	Page	Q:
Contract 15 (a)	7	Request that the second sentence in this Section, beginning with "The Contractor shall use counsel reasonably acceptable..." be deleted in its entirety. There is no definition contained in this Section to quantify the requirements of what is or is not acceptable.

A: The Contract terms have been approved by the State of Connecticut, Attorney General's Office. As this is an RFP, terms and conditions may or may not be modified with the selected Contractor(s) during the negotiation phase.

Section	Page	Q:
Contract 15 (a)	7	Request that a concluding sentence be added to this Section that reads: "The foregoing notwithstanding, Contractor's obligations under this Section 15 shall only apply to the extent of its own fault or negligence."

A: The Contract terms have been approved by the State of Connecticut, Attorney General's Office. As this is an RFP, terms and conditions may or may not be modified with the selected Contractor(s) during the negotiation phase.

Section	Page	Q:
Contract 15. (d)	7	Request that the second sentence in this Section be changed to read: "The Contractor shall name the State as an additional insured on the policy." The requirements for delivery of the policy are noted in Section 36 (a).

A: The Contract terms have been approved by the State of Connecticut, Attorney General's Office. As this is an RFP, terms and conditions may or may not be modified with the selected Contractor(s) during the negotiation phase.

Section	Page	Q:
Contract 17. (f)	8	Manufacturer would like to clarify that, as it has no control over how the buses procured under any resultant contract with Conn DOT will be used it cannot warrant the fitness or merchantability of the product for said uses. Request that this Section be deleted in its entirety.

A: The Contract terms have been approved by the State of Connecticut, Attorney General's Office. As this is an RFP, terms and conditions may or may not be modified with the selected Contractor(s) during the negotiation phase.

Section	Page	Q:
Contract 20. (d)	8	Request clarification that risk of loss transfers to Conn DOT upon delivery of the buses to the designated location. The Contractor cannot be responsible for events/occurrences that take place after delivery when the buses are out of its direct control.

A: The Contract terms have been approved by the State of Connecticut, Attorney General's Office. As this is an RFP, terms and conditions may or may not be modified with the selected Contractor(s) during the negotiation phase.

Section	Page	Q:
Contract 21.	8	Request that the second sentence in this Section be changed to read: "If any goods fail in any material way to meet the specifications in the Contract, Conn DOT may, in its reasonable discretion..."

A: The Contract terms have been approved by the State of Connecticut, Attorney General's Office. As this is an RFP, terms and conditions may or may not be modified with the selected Contractor(s) during the negotiation phase.

Section	Page	Q:
Contract 21.	8	Request that the final sentence in this Section be deleted in its entirety. The manufacturer should have the ability to correct any cause for rejection or to negotiate a reasonable remedy of said cause.

A: The Contract terms have been approved by the State of Connecticut, Attorney General's Office. As this is an RFP, terms and conditions may or may not be modified with the selected Contractor(s) during the negotiation phase.

Section	Page	Q:
Contract 36. (b)	17	Request that this Section be deleted in its entirety, as it conflicts with the requirements noted in section 36. (a) for delivery of documents to Conn DOT.

A: NO; this requirement is mandated by statute.

Section	Page	Q:
Proposal Require-ments Exhibit A Overview	12, 13	Request clarification on the terms "like" and "unlike" used on the Equipment Procurement Needs tables on these pages.

A: The terms "Like Replacement" and "Unlike Replacement" are for the internal capital planning use of ConnDOT. The terms signify that the equipment scheduled for replacement will be replaced with similar equipment or equipment of another size.

Section	Page	Q:
Proposal Require-ments 1.	16	Request clarification that the contract cannot be extended for an additional five-year term.

A: We confirm that the contract cannot be extended for an additional five-year term.

Section	Page	Q:
Proposal Require-ments 2.	16	Request clarification that the requirements noted in this Section apply to commercial carriers and not to the transit agencies participating in this procurement or to the successful contractor/supplier of buses.

A: The requirements of this section apply to the bus manufacturer/supplier if the manufacturer/supplier delivers the buses, or to the common carrier if the manufacturer/supplier uses a common carrier to deliver the buses.

Section	Page	Q:
Proposal Require-ments 4.	16	Request clarification on the minimum number of buses per year that will be purchased under the resultant contract. This information is vital for proper costing/pricing.

A: The Department intends to purchase all replacement buses. However, the specific vehicle size and drive system configurations may change.

Section	Page	Q:
Proposal Requirements 7.	17	Request that the requirement for performance and payment bonds noted in this Section be deleted. The FTA has clarified in Circular 4220.1F that such bonds are only required for construction projects, not rolling stock procurements. Additionally, the requirement for the bonds noted in this Section are/will: • Exceedingly difficult to obtain. • Extremely expensive to obtain. • Place an unusual financial burden on the successful proposer. • Add extra expense for the procuring agency.

A: At this time, the bond requirements will remain at 10%; however, a reduction in the bonding requirements may be considered during the negotiation phase of the RFP process.

Section	Page	Q:
Training C. 6.	22	Request clarification on the engine overhaul training noted in this Section. Is this training a part of the required 80 hours or separate from the 80 hours required?

A: This is part of the 80 hour requirement.

Section	Page	Q:
Training D. 4.	22	Request clarification on the transmission overhaul training noted in this Section. Is this training a part of the required 80 hours or separate from the 80 hours required?

A: This is part of the 80 hour requirement.

Section	Page	Q:
Training	24	Request clarification on the Train the Trainer requirement noted in this Section. Is this single 4-hour session part of the 80 hour total training requirement, or in addition to the 80 hour requirement?

A: This is in addition to the 80 hour requirement.

Section	Page	Q:
Manuals	24	Request approval to provide one operator's manual per bus. The operator's manual will also be provided on CD and Conn DOT or the purchasing authority can print as many as are required.

A: No, we want 5 printed manuals for every bus purchased.

Section	Page	Q:
Manuals	24	Request clarification that the quantities of manuals noted here are per order, regardless of the size of the order.

A: Yes, except for the Operators' Manuals, the specific # listed is required.

Section	Page	Q:
Manuals	24	Request clarification that any and all transit agencies that may purchase buses off ant contract resulting from this RFP will accept a common manual format.

A: Yes

Section	Page	Q:
Manuals	24	Request clarification on exactly which OEM engine manuals are required.

A: For each engine type provided.

Section	Page	Q:
Manuals	24	Request clarification on exactly which OEM transmission manuals are required.

A: For each transmission type provided

Section	Page	Q:
Manuals	24	Request approval to deliver operator's manuals with the first bus, the maintenance manuals 30 days after delivery of the first bus and the parts manuals 60 days after delivery of the first bus. This timeline is necessary in order to assure complete, accurate manuals are delivered to Conn DOT.

A: We prefer the delivery schedule listed in our specification. Deviations will be evaluated appropriately.

Section	Page	Q:
Manuals	24	Request approval of manufacturer's standard electrical schematic drawings, as shown on the attached under Tab A.

A: There is no preapproval process with this RFP. Please submit with your proposal.

Section	Page	Q:
Manuals	25	Request approval to provide the 11" x 17" driver's compartment layout drawing at any pre-production meeting that would be held, for approval of locations by Conn DOT. This is an engineering design drawing that is not included in the standard manuals. The locations of switches, controls, etc... are documented in the operator's and maintenance manuals.

A: *This should be submitted with your proposal.*

Section	Page	Q:
Manuals	25	Manufacturer would like to clarify that parts catalogs do not have the OEM suppler part number listed.

A: This should be listed in your proposal as a deviation which will be evaluated appropriately.

Section	Page	Q:
Manuals	25	Request approval for a 180 day (bi-annual) time frame for providing updates to parts and maintenance manuals.

A: We prefer the time frame listed in our specification. Deviations should be listed in your proposal and will be evaluated appropriately.

Section	Page	Q:
Manuals	26	Request clarification that the buses shall be duplicates in design, manufacture and installation in each lot. Over the course of a five-year contract there may be changes/improvements in design or components that become necessary or prudent.

A: It is understood there may be some changes in each procurement year. ConnDOT would expect to be made aware of changes and sign off for them.

Section	Page	Q:
Manuals	26	Request clarification that any changes made to manuals after drafts have been approved by Conn DOT, other than manufacturer's updates, will be paid for by Conn DOT or the procuring agency.

A: This is understood with the additional cost to be approved in advance.

Section	Page	Q:
Liquidated Damages	27	Request clarification that the "calendar days" in this Section are defined the same as calendar days are defined in 1. (f) of the sample contract included elsewhere in the Solicitation.

A: In this section, calendar days means every day, including Saturdays, Sundays, and days designated as National or State of Connecticut holidays.

Section	Page	Q:
Payments	28	Request approval of payment to made within 30 days of receipt of a valid invoice, per industry standard practices.

A: The Contract terms have been approved by the State of Connecticut, Attorney General's Office. As this is an RFP, terms and conditions may or may not be modified with the selected Contractor(s) during the negotiation phase.

Section	Page	Q:
Payments	28	Request approval of progress payments, per the Standard Bus Procurement Guidelines, as follows: • 40% payment due upon installation of front & rear axles. • 20% payment when buses are approved for shipment from the factory. • 38% payment upon delivery and acceptance due within 30 days after acceptance. • 2% retainage for infancy failures, to paid within 30 days of receipt of invoice, acceptance of all deliverables, rectification of any deficiencies, completion of required audits.

A: The RFP does not contain provisions for progress payments; however, as this is an RFP, payment provisions may or may not be negotiated with the selected Contractor(s).

Section	Page	Q:
Warranty	29	Request approval for fleet defect rates of 20% for deliveries of over 50 buses and 25% for deliveries of 4-49 buses as noted in Section 4.1.6.1 of the Standard Bus Procurement Guidelines.

A: We prefer the fleet defect rates listed in our specification. Deviations should be listed in your proposal and will be evaluated appropriately.

Section	Page	Q:
Warranty	30	Manufacturer would like to clarify that warranty repairs to the engine, transmission and HVAC system must be performed by the respective OEM agency in order not to void the warranty.

A: This is correct unless the OEM has an agreement with the agency to do some level of warranty repair.

Section	Page	Q:
Warranty	30	Request approval to begin warranty repairs within 10 days after receiving notification of a defect. This time is necessary to consult with the affected part provider, procure the parts, make arrangements for service space etc...

A: We prefer the language listed in our specification. Deviations should be listed in your proposal and will be evaluated appropriately.

Section	Page	Q:
Warranty	31	Request approval to provide a parts credit as reimbursement for filed warranty claims.

A: We prefer the language listed in our specification. Deviations should be listed in your proposal and will be evaluated appropriately.

Section	Page	Q:
Price Escalation	32	Request approval to use PPI category 1413 Truck and Bus Bodies for the price redetermination.

A: The Department will accept using the Producer's Price Index 1413 as the means for price adjustment over the duration of this contract. The use of this specific index was recommended by two manufactures. However, it must be noted that the amount negotiated between the Department and the proposer as the cost being due to Federal Regulatory changes will be excluded from price adjustment calculations based upon the PPI index change as the cost of the Federal regulatory changes will be reflected in the index itself.

Section	Page	Q:
Price Escalation	32	Request that the 5% cap noted in this Section be deleted. During the past year manufacturers have seen much higher increases in the PPI that has impacted profitability.

A: The Department will accept the elimination of the 5% cap and allow adjustment based upon the Change in PPI 1413 adjusted to account for regulatory changes.

Section	Page	Q:
Price Escalation	32	Request clarification on how price increases due to Federal Regulatory changes will be addressed.

A: The degree of price change due to Federal Regulatory changes are unknown to either party at this time, The price change will be negotiated between the parties. The vendor must supply cost documentation as requested by the Department.

Section	Page	Q:
Technical Specification	33	Request approval for an over body length of 32 ft 3.6 in for the 30 ft bus model proposed as shown on the drawing (100-9100-A01) under Tab B. Request approval for an over body length of 35 ft 8.4 in for the 35 ft bus model proposed as shown on the drawing (100-9101-A01) under Tab B. Request approval for an over body length of 40 ft 4.8 in for the 40 ft bus model proposed as shown on the drawing (100-9102-A01) under Tab B.

A: There is no preapproval process with this RFP. Please submit with your proposal.

Section	Page	Q:
Technical Specification	33	Request clarification on the requirements for the severe duty notebook computers noted on this page.

A: The Panasonic Toughbook is an example of the notebook computer required.

Section	Page	Q:
Technical Specification	34	Request clarification on the maximum grades and height of road crowns that can be found in the Waterbury service area.

A: We do not have this information readily available

Section	Page	Q:
Basic Body	35	Request clarification on the phrase "inherently corrosion resistant materials". Is Conn DOT asking for buses fabricated from stainless steel?

A: Stainless steel is an example of inherently corrosion resistant material.

Section	Page	Q:
Basic Body	35	Request approval of mild steel used in the bus structure, with corrosion protection applied as described on the attached under Tab C.

A: There is no preapproval process with this RFP. We prefer you meet our specification. You may submit a proposal with a deviation and it will be evaluated appropriately.

Section	Page	Q:
Basic Body	36	Manufacturer would like to clarify that, due to the hanging engine cradles design used on the 60 ft bus, rear lift towing is not recommended.

A: Please note this in your proposal.

Section	Page	Q:
Basic Body	37	Request approval for a driver's platform height of 13.7 inches. This dimension reflects the design of the bus and cannot be changed.

A: There is no preapproval process with this RFP. You may submit a proposal with a deviation and it will be evaluated appropriately.

Section	Page	Q:
Basic Body	38	Request approval for the standard aluminum exterior body panels as shown on the drawing (141-LFR40- K01) attached under Tab D. The corrosion resistant aluminum panels are bonded to the bus structure.

A: There is no preapproval process with this RFP. You may submit a proposal with a deviation and it will be evaluated appropriately.

Section	Page	Q:
Basic Body	38	Request approval for rain gutters over the passenger doors and driver's window on all length buses.

A: There is no preapproval process with this RFP. You may submit a proposal with a deviation and it will be evaluated appropriately.

Section	Page	Q:
Basic body	38	Request approval for a surface mount for the rear license plate on the aluminum engine door.

A: There is no preapproval process with this RFP. You may submit a proposal with a deviation and it will be evaluated appropriately.

Section	Page	Q:
Basic Body	39	Request approval for a rear bumper with a height of 31.7 inches above the street level and a front bumper with a height of 24.6 inches above the street level, as shown on the drawing (109-LFR-A01) attached under Tab E.

A: There is no preapproval process with this RFP. You may submit a proposal with a deviation and it will be evaluated appropriately.

Section	Page	Q:
Basic Body	39	Request approval for a rear bumper with a height of 27.6 inches above the street level and a front bumper with a height of 21.5 inches above the street level for the 60 ft bus as shown on the drawing (109-BRT-A01) attached under Tab F.

A: There is no preapproval process with this RFP. You may submit a proposal with a deviation and it will be evaluated appropriately.

Section	Page	Q:
Basic Body	40	Request clarification on exactly which interior materials must meet FTA Docket 90 requirements.

A: It is up to the proposer to insure all interior materials offered meet this requirement.

Section	Page	Q:
Basic Body	40	Request approval for the standard driver's barrier for the proposed buses, which includes an integral on-board electronics storage cabinet and driver's storage box, as shown on the photograph, attached under Tab G.

A: There is no preapproval process with this RFP. You may submit a proposal with a deviation and it will be evaluated appropriately.

Section	Page	Q:
Engine	41	Request approval for a Cummins ISB engine for the hybrid bus propulsion package on the 30, 35 and 40 ft buses.

A: There is no preapproval process with this RFP. You may submit a proposal with a deviation and it will be evaluated appropriately.

Section	Page	Q:
Engine	41	Request clarification that the 4.0 mpg fuel economy requirement is a design goal, not an absolute requirement. There are too many variables involved in the operation of a transit bus (including driver's performance, idle time, route profile variations and weather to name a few) that affect fuel economy for the manufacturer to be able to certify a specific mpg will be achieved.

A: It is expected that the proposer will be able to provide some test documentation to meet this fuel economy per the conditions listed in the specification.

Section	Page	Q:
Engine	41	Request clarification on which hybrid drive system is preferred by Conn DOT.

A: The specification documents three acceptable systems. Others may be proposed with a deviation submission. It is expected the bus manufacturer will propose the system that it expects to work the best with its bus models.

Section	Page	Q:
Engine	42	Manufacturer would like to clarify that an Allison EP50 hybrid propulsion system is required for the 60 ft bus.

A: There is no preapproval process with this RFP. You may submit this hybrid propulsion selection in your proposal.

Section	Page	Q:
Engine	44	Request approval of a Kidde Dual Spectrum fire suppression system as described on the attached under Tab H.

A: There is no preapproval process with this RFP. You may submit this hybrid propulsion selection in your proposal.

Section	Page	Q:
Engine	45	Manufacturer would like to clarify that the fuel filler on the 60 ft bus is located more than 25 ft behind the centerline of the front door (approximately 39 ft).

A: This should be noted in your proposal submission.

Section	Page	Q:
Transmiss ion	45	Request clarification that the Allison B330R transmission model noted is actually the B300R model.

A: It should have been listed as Allison B300R

Section	Page	Q:
Transmiss ion	46	Manufacturer would like to clarify that Allison requires the retarder on/off switch to be within the driver's reach.

A: This should be noted in your proposal submission.

Section	Page	Q:
Axles	46	Request approval for a Meritor FH946 front I-beam axle rated at 16,000 lbs as described on the attached under Tab I.

A: There is no preapproval process with this RFP. You may submit a proposal with a deviation and it will be evaluated appropriately.

Section	Page	Q:
Axles	46	Request approval for a Meritor 71163 Hypoid single reduction drive axle as described on the attached under Tab J.

A: There is no preapproval process with this RFP. You may submit a proposal with a deviation and it will be evaluated appropriately.

Section	Page	Q:
Wheel & Tires	47	Request clarification on the make and model of the hubodometer required.

A: We did not specify a make and model for the required hubodometer required.

Section	Page	Q:
Steering	48	Request approval for a Douglas steering column with a rearward tilt adjustment range of 35° as shown on the drawing (103-LFW-C01) attached under Tab K.

A: There is no preapproval process with this RFP. You may submit a proposal with a deviation and it will be evaluated appropriately.

Section	Page	Q:
Brakes	49	Request additional information on the standard CTTRANSIT chock block. Please provide dimensions, a drawing or a photograph.

A: It is a Trapezoid shape block of wood 3.5" wide, 7" long at the base, 3.5" long on top with a 45 degree angle.

Section	Page	Q:
HVAC	51	Manufacturer would like to clarify that, due to 2010 engine emissions limit changes and the subsequent design requirements for exhaust after-treatment the HVAC system for the proposed buses will be either a Thermo King "L" model or a rooftop mounted unit.

A: There is no preapproval process with this RFP. You may submit a proposal with a deviation and it will be evaluated appropriately.

Section	Page	Q:
HVAC	53	Request approval for the driver's ventilation to be provided through the main HVAC system, with an auxiliary booster fan located above the driver's station that provides additional air flow for the driver's comfort. Fresh air is available through the driver's side window.

A: There is no preapproval process with this RFP. You may submit a proposal with a deviation and it will be evaluated appropriately.

Section	Page	Q:
HVAC	53	Manufacturer would like to clarify that, due to the unique design and styling of the 60 ft. bus only a single roof hatch, located above the drive axle, is available. Please note that the proposed vehicle satisfies the emergency egress requirements of FMVSS 217.

A: There is no preapproval process with this RFP. You may submit a proposal with a deviation and it will be evaluated appropriately.

Section	Page	Q:
HVAC	54	Request approval for heated air ducted from the front heater/defroster unit to be used to clear the entrance area of snow and ice.

A: There is no preapproval process with this RFP. You may submit a proposal with a deviation and it will be evaluated appropriately.

Section	Page	Q:
HVAC	54	Request approval for an under seat heater at the exit door to be used to keep this area clear of snow and ice. The underseat heater is rated at 45,000 BTU.

A: There is no preapproval process with this RFP. You may submit a proposal with a deviation and it will be evaluated appropriately.

Section	Page	Q:
HVAC	54	Request approval for underseat heaters rated at 45,000 BTU, placed strategically in the bus to prevent cold floor and ensure temperature uniformity.

A: There is no preapproval process with this RFP. You may submit a proposal with a deviation and it will be evaluated appropriately.

Section	Page	Q:
Doors	55	Request clarification that the requirement for slide glide type doors is for the front door only.

A: There is no preapproval process with this RFP. You may submit a proposal with a deviation and it will be evaluated appropriately.

Section	Page	Q:
Doors	55	Request approval for a plug type front door on the 60 ft bus. A slide glide type door is not available.

A: There is no preapproval process with this RFP. You may submit a proposal with a deviation and it will be evaluated appropriately.

Section	Page	Q:
Doors	55	Request approval for a split glazing on the front, plug type door on the 60 ft bus. The upper and lower glazing are both very large and provide an excellent view of the curb for the driver.

A: There is no preapproval process with this RFP. You may submit a proposal with a deviation and it will be evaluated appropriately.

Section	Page	Q:
Fare Collection	56	Request clarification on: "A stanchion around the farebox/TRiM equipment is not required." Our interpretation of ADA is that one is required. Also, on page 59 it is noted that a passenger assist around the farebox is required.

A: It was not our desire to have a stanchion around the farebox. However, if ADA requires it then it must be provided. ADA requirements take precedence.

Section	Page	Q:
Windows	57	Request clarification if passenger windows are to be all emergency egress.

A: All unobstructed windows are to be emergency egress.

Section	Page	Q:
Windows	57	Request clarification if the passenger windows are to have only an openable lower section or only an openable transom section or if both sections are to be openable.

A: Only the upper transom sections are to be openable.

Section	Page	Q:
Windows	57	Request clarification on the "under mounted convex mirror" noted in this Section. Is this in addition to the exterior side view mirrors noted in the Mirrors Section?

A: No, This is integral to the mirror.

Section	Page	Q:
Mirrors	58	Request approval for a curbside mirror with a lower edge that is 78 inches above street level.

A: There is no preapproval process with this RFP. You may submit a proposal with a deviation and it will be evaluated appropriately.

Section	Page	Q:
Mirrors	58	Request clarification that the road side exterior mirror is heated, but is manually adjustable.

A: The road side mirror is heated and manually adjustable.

Section	Page	Q:
Seats	58	Request clarification as to whether the insulation in the bus is required to meet the requirements of FTA Docket 90, as it is noted here that the insulation need not comply, however on page 40 (under basic Body) it is noted that "all materials shall comply.

A: The insulation in the bus is required to meet the requirements of FTA Docket 90.

Section	Page	Q:
Seats	58	Request approval to provide, on the 60 ft bus the American Seating model 6468 passenger seats from the turntable area aft, with the American Seating 6466 passenger seats forward of the turntable area, as shown on the attached drawing (110-9103-A01) under Tab L.

A: There is no preapproval process with this RFP. You may submit a proposal with a deviation and it will be evaluated appropriately.

Section	Page	Q:
Seats	59	Request clarification that armrests are only required on aisle facing longitudinal passenger seats where there is not a barrier or wheelhouse which serves the same purpose.

A: That is correct.

Section	Page	Q:
Passenger Assists	60	Request clarification that connecting tees and angles may be stainless steel as well as powder coated metal castings.

A: That is correct.

Section	Page	Q:
Bus Interior	61	Request approval for unfinished (natural) stainless steel trim for the molding and trim strips used to finish the ceiling panels.

A: There is no preapproval process with this RFP. You may submit a proposal with a deviation and it will be evaluated appropriately.

Section	Page	Q:
Bus Interior	61	Request clarification as to whether the bus insulation is required to meet FTA Docket 90a, as there is conflicting language in other areas of the specification.

A: The insulation in the bus is required to meet the requirements of FTA Docket 90.

Section	Page	Q:
Bus Interior	62	Request clarification that the manufacturer is to provide both provision for and the notice frames noted on this page in paragraph 5.

A: That is correct

Section	Page	Q:
Paint & Decals	63	Manufacturer would like to clarify that the decal supplier does not require edge sealing.

A: There is no preapproval process with this RFP. You may submit a proposal with a deviation and it will be evaluated appropriately.

Section	Page	Q:
Wheel-chair Ramp	64	Request clarification that a ramp with a slope of 1:6 is required.

A: A 1:6 slope ramp is required.

Section	Page	Q:
Wheel-chair Ramp	64	Request clarification that the intent is for the slope of the deployed ramp to be measured with the bus on a level surface with the ramp deployed to the same surface/plane.

A: That is correct.

Section	Page	Q:
Wheel-chair Secure-ment	65	Manufacturer would like to clarify that it is not possible to have a wheelchair securement area with a longitudinal dimension of 53 inches in a 30 ft bus with two doors. The maximum space is 48 inches, per ADA.

A: That is correct.

Section	Page	Q:
Wheel-chair Secure-ment	65	Manufacturer would like to clarify that it is not possible to have a wheelchair securement area with a longitudinal dimension of 53 inches in a 35 ft bus with two doors. The maximum space is 49 inches.

A: That is correct.

Section	Page	Q:
Exterior Route Display	68	Request clarification on the number of software programming packages required.

A: One installed on each computer provided.

Section	Page	Q:
Exterior Route Display	69	Request clarification on the number of USB keys required.

A: One for each different bus model provided.

Section	Page	Q:
Operator's Work Area	74	Manufacturer would like to clarify that the proposed buses are equipped with variable speed electric windshield wipers driven by a common motor.

A: There is no preapproval process with this RFP. You may submit a proposal with a deviation and it will be evaluated appropriately.

Section	Page	Q:
Operator's Work Area	74	Request clarification on the windshield washers. A "dry arm" is noted, but wet arms are then described.

A: A dry arm is requested.

Section	Page	Q:
Electrical	75	Request clarification on the type (make & model) of jump start connector required.

A: Goodall Connector - the positive cable is connected to the 24 volt terminal of the battery disconnect switch, the negative cable to the basic ground point.

Section	Page	Q:
Electrical	78	Request approval for the I/O zone locations on the proposed buses as shown on the attached drawing (Multiplex layout) under Tab M.

A: There is no preapproval process with this RFP. You may submit a proposal with a deviation and it will be evaluated appropriately.

Section	Page	Q:
Electrical	79	Request clarification as to whether the notebook computers described in this Section are in addition to those noted on page 33 and if so how many are required.

A: They are not additional computers.

Section	Page	Q:
Public Address System	79	Request approval for the standard Mito 30 watt, 4 ohm public address speakers installed in the proposed buses, as described on the attached under Tab N.

A: There is no preapproval process with this RFP. You may submit a proposal with a deviation and it will be evaluated appropriately.

Section	Page	Q:
Video Security System	83	Request clarification on the 120GB hard drives noted in par. 2 on this page. Are these to be provided as well as the 160 GB hard drives noted in par. 8?

A: They should all be 160 GB hard drives.